FLIGHT SAFETY FOUNDATION

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Basic Aviation Risk Standard

Offshore Helicopter Operations

Version 2, May 2015

Contents

Purpose

This Standard provides a basis for performing risk-based management of offshore helicopter operations.

All national and international regulations pertaining to offshore helicopter operations must be followed. This Standard is designed to supplement those requirements and is aimed at assisting both the companies that contract aviation services and the contracted air operators themselves.

Document Structure and Use

This Standard is presented in a concise, risk-based format to emphasize the relationship between major threats to offshore helicopter operations, their associated controls and applicable recovery/mitigation measures presented in Figure 1.

The format is intended to assist all company personnel engaged in coordinating offshore helicopter activities to better understand and manage the aviation risk to their operation.

All companies and air operators are encouraged to further risk assess threats to the level of detail appropriate for their individual operations.

Controls that have wide applicability to multiple threats are shown as 'common controls' and controls that relate to a few threats are listed against one primary threat, for ease of presentation. Similarly routinely conducted activities intended to mitigate an accident (such as passenger briefing) are on the left hand side and some routine activities (such as insurance, flight following and HUET training) are on the right hand side of the bow tie.

Companies and air operators are encouraged to consider which controls may be effective against other threats and identify the connections between controls and threats relevant to their individual operations through their risk assessment process.

Companies and air operators are expected to evaluate the effectiveness of the implemented controls, identify any interdependence between controls (where for example a failure of one control reduces the effectiveness of another) and continuously improve control effectiveness as part of their Safety Management System.

Aircraft Operator Review

This Standard is designed to be used as a primary reference for the review and approval of aircraft operators. Aircraft operators will be audited to the BARS Question Master List with an audit protocol mapped to this Standard and ICAO Annexes.

Variations

Any variation to this Standard is at the discretion of each company. Each variation request must be assessed to demonstrate that the risks associated with the variation are tolerable and justify safe continuation of operations. Where requirements apply to 'long-term contracts', if they are not practical to introduce for the start of the contract, it is expected that an assessment is made of when they can be introduced during the life of a proposed contract.

A diagram showing the Basic Aviation Risk Standard Variance Process is presented in Figure 2.

Key Definitions

Aircraft Operator

The approved organization providing a service with aircraft (and includes reference to approved training/maintenance/ continuing airworthiness management organizations etc. that are either part of the aircraft operator or contracted by the aircraft operator).

Company

The individual entity using this Standard in support of contracted aviation operations.

Competent Aviation Specialist

A company designated aviation advisor or Flight Safety Foundation BARS Accredited Auditor.

High Traffic Risk Environment

An area where the potential for conflicting traffic is assessed as being high. This may include:

- Areas where there are many destinations in the same basin offshore;
- Multiple aircraft operators using similar routes;
- Operations near military exercise areas or other sources of regular adjacent traffic;
- Onshore operations from busy airfields with a mix of helicopter and fixed wing traffic; or
- Multiple adjacent onshore heliports.

Hostile environment

An environment in which a successful emergency landing cannot be assured; or the occupants of the aircraft cannot be adequately protected from the elements until recovered; or search and rescue response/capability cannot be provided consistent with the anticipated exposure (irrespective of whether the area is designated as hostile by the responsible regulatory authority).

All environments should be assumed to be hostile unless demonstrated to be non-hostile for the specific operation being conducted.

Non-hostile environment

An environment (unless designated as hostile by the responsible regulatory authority) in which a successful emergency landing can be reasonably assured and it can be assured that the occupants can be adequately protected from the elements until recovered.

All environments should be assumed to be hostile unless demonstrated to be non-hostile for the specific operation being conducted. Some environments which may be non-hostile for most of the year may become hostile in locally extreme weather. Considerations should be given to:

- Occupant survival time in the localized water conditions;
- Search and rescue resources available;
- Total call-out and recovery time; and
- Cumulative time taken for individual recovery operations.

Long-term contract

Any contract using aircraft assigned solely to the company for a planned duration of greater than six months. Certain additional requirements apply to long-term contracts. Where practical these should be considered for all contracts.

Performance Class 1

The helicopter is able to land within the rejected takeoff distance available or safely continue the flight to an appropriate landing area, depending on when the failure occur.

Performance Class 2

Performance is available to enable the helicopter to safely continue the flight, except when the failure occurs early during the takeoff or late in the landing, in which cases a forced landing may be required.

Performance Class 3

At any time during the flight, a forced landing may be required in a multi-engine helicopter but will be required in a single-engine helicopter.

Policy, Procedures and Processes

Where these terms are used they require the documentation of the associated policy, procedure or process in a controlled, accessible and comprehensible manner, as shall the Safety Management System and other manuals.

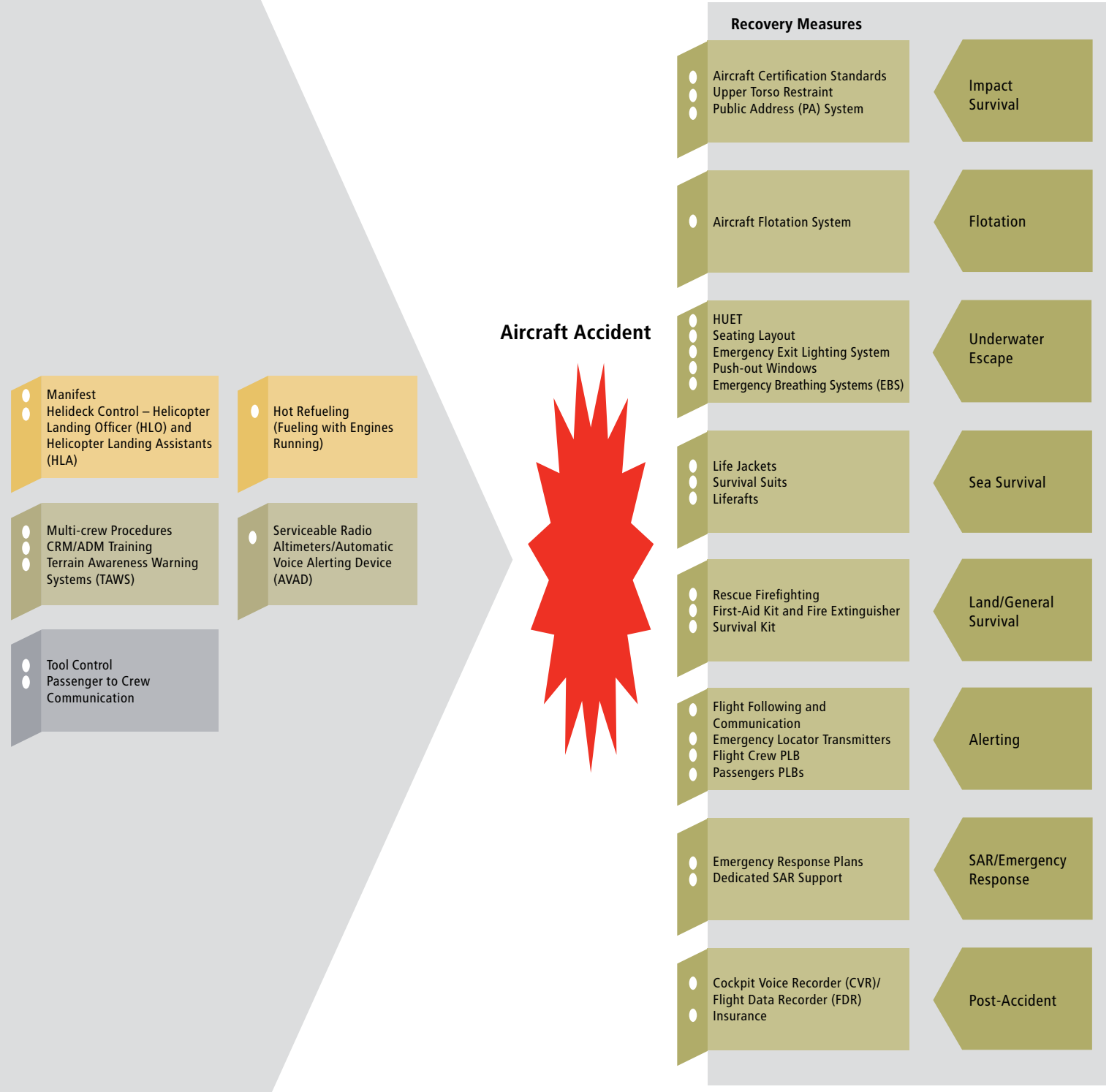
Vessels

Vessels include Floating Production Storage Offload (FPSO) vessels, Mobile Drilling Unit (MODU) except when jacked-up, Diving Support Vessels (DSV), derrick barges, seismic vessels and other ships.

Additional definitions or abbreviations related to the use of this Standard are listed in Appendix 3.

Figure 1: BARS Bow Tie Risk Model – Schematic of Aviation Risk Management Controls and

Recovery Measures.



BARS® BASIC AVIATION RISK STANDARD
FLIGHT SAFETY FOUNDATION

All Threats 1.0: Common Controls

Common controls that apply to all threats outlined in this Standard

ORGANIZATIONAL CONTROLS

Common Control 1.1: Safety Leadership and Culture

All aircraft operators must demonstrate an active commitment to safety. They must actively encourage and promote a positive safety culture within their organization, by developing safety leadership skills and behaviors and passionately engaging their whole workforce. They must regularly evaluate their culture, for example by safety culture surveys and analysis of other indicators, as part of their Safety Management System (SMS).

Refer to the following information on safety leadership and culture:

ICAO Safety Management Manual

Beyond SMS, AeroSafety World, May 2008

Common Control 1.2: Aircraft Operator Safety Management System

All aircraft operators must have a Safety Management System (SMS) that is integral to the management activity of their organization.

The SMS must identify actual and potential safety hazards, assess the associated risks and include consideration of human performance, safety culture and threat and error management. The SMS must appropriately cover activities conducted by safety critical sub-contractors.

The aircraft operator must conduct a risk assessment before commencing operations for any new or changed aviation activity and implement any identified mitigating controls. There must be a defined process to periodically review the assessments for continuing activities.

The SMS must be subject to continuous improvement.

The aircraft operator must have safety objectives that are reviewed at least annually and regularly monitor appropriate Safety Performance Indicators.

The aircraft operator must promptly advise the company of any incident, accident or non-standard occurrence related to the services provided to the company that has, or potentially could have, disrupted operations or jeopardized safety, and include any corrective or preventative actions being taken.

It is recommended that whenever practical, air operators participate in relevant industry safety bodies and initiatives.

Refer to the following information on SMS development and implementation:

ICAO Annex 19

ICAO Safety Management Manual

Flight Safety Digest Volume 24 No 11 – 12, Nov – Dec 2005

Flight Safety Foundation Operational Risk Assessment Tool

International Helicopter Safety Team – SMS Toolkit – 2nd Edition Sept 2009

European Helicopter Safety Team - Safety Management Toolkit for Complex Operators

Common Control 1.3: Aircraft Operator Approval

Licenced aircraft operators who hold an Air Operator's Certificate (AOC), who have been approved for use by the company's established process and where necessary a Competent Aviation Specialist, must be used.

Sub-chartering (wet-lease or cross-hiring) by the aircraft operator must not be undertaken without approval of the contracting company. Regardless of ownership, contracted aircraft must be operated and controlled in accordance with the AOC of the aircraft operator(s) specified in the contract.

Common Control 1.4: Drug and Alcohol Policy

The aircraft operator must have a Drug and Alcohol Policy, with associated Standard Operating Procedures that meet all requirements of the responsible regulatory authority. Where no such regulatory requirements exist the operator must have a policy that at a minimum meets the requirements of the contracting company.

FLIGHT OPERATIONS CONTROLS

Common Control 1.5: Flight Operations Procedures

The aircraft operator must have an Operations Manual and associated procedures for normal and emergency operations, suitable for the operational circumstances and the aircraft types operated.

Common Control 1.6: Flight Crew Competence

The aircraft operator must have an appropriate procedure for the initial selection of flight crew that considers aptitude and compatibility.

Flight crew must meet the requirements listed in Appendix 1. Where agreed by the company, the aircraft operator may use Competency Based Training in lieu of minimum experience requirements if the training program has been evaluated and meets the requirements of Flight Safety Foundation Offshore Helicopter Operations Flight Crew Competency Based Training Framework.

Flight crew must receive annual training to the standards of the responsible regulatory authority with two flight checks annually (or every six months for long-term contracted operations). The flight checks must include an annual instrument rating renewal (where applicable), proficiency or base check (non-revenue) and a route check (revenue-flight permissible). Where distinct climatic seasons (such as snow/ice) are experienced, training related to the seasonal change is recommended.

Before commencing flight duties in a new location on long-term contract, all flight crew must receive a documented line check that includes orientation of local procedures and environment when these differ from their previous operating location.

Common Control 1.7: Flight Crew Fatigue Management

Aircraft operators must apply the following flight time limits unless the responsible regulatory authority's requirements are more stringent:

Single-pilot operation	Two-pilot operation
8 hours daily flight time	10 hours daily flight time
40 hours in any 7 day consecutive period	45 hours in any 7 day consecutive period
100 hours in any 28 day consecutive period	120 hours in any 28 day consecutive period
1000 hours in any 365 day consecutive period	1200 hours in any 365 day consecutive period

A duty day must not exceed 14 hours and where 12 hours has been exceeded, this must be followed by a rest period of a minimum of ten hours. Crews on rotational assignments that arrive following overnight travel, or travel exceeding four time zone changes, must not be rostered for flying duties until the minimum ten hour rest period is met.

Regulatory approved fatigue management programs may be used in lieu of the above limits when endorsed by a Competent Aviation Specialist.

AIRWORTHINESS CONTROLS

Common Control 1.8: Basic Aircraft Equipment and Configuration

The aircraft basic equipment fit and configuration must meet the requirements listed in Appendix 2.

The use of aircraft that differ in equipment fit/configuration from the contracted aircraft (including temporary use) must be agreed with the company's Competent Aviation Specialist.

Control 1.9: Continuing Airworthiness Management

The aircraft operator must have procedures in place to manage the continuing airworthiness of its aircraft to ensure that:

(1) The aircraft are maintained in an airworthy condition;

(2) Operational, role related and emergency aircraft equipment carried is correctly installed and serviceable or clearly identified as unserviceable (when permitted);

(3) The certificate of airworthiness (or equivalent) remains valid;

(4) The aircraft and its installed equipment is maintained in accordance with an appropriate, approved or accepted Maintenance Program;

(5) Airworthiness directives and service bulletins are appropriately assessed;

(6) Modifications and repairs are done in accordance with approved or accepted design data as applicable;

(7) All parts accepted into stores and fitted conform to approved design data, were previously appropriately released by an appropriate organization and are in a condition for safe operation;

(8) Defects are only deferred in accordance with an approved Minimum Equipment List (MEL) and/or procedures approved by the responsible regulatory authority;

(9) A process to ensure the planning and timely completion of all scheduled maintenance is outlined;

(10) Maintenance is conducted in appropriate facilities, by appropriately approved and adequately resourced maintenance organizations/personnel;

(11) Accurate and complete maintenance records are maintained; and

(12) Maintenance standards are defined and adhered to.

All Threats 1.0 (cont.)

Common Control 1.10: Maintenance Personnel Competence

Maintenance personnel must meet the experience requirements listed in Appendix 1.

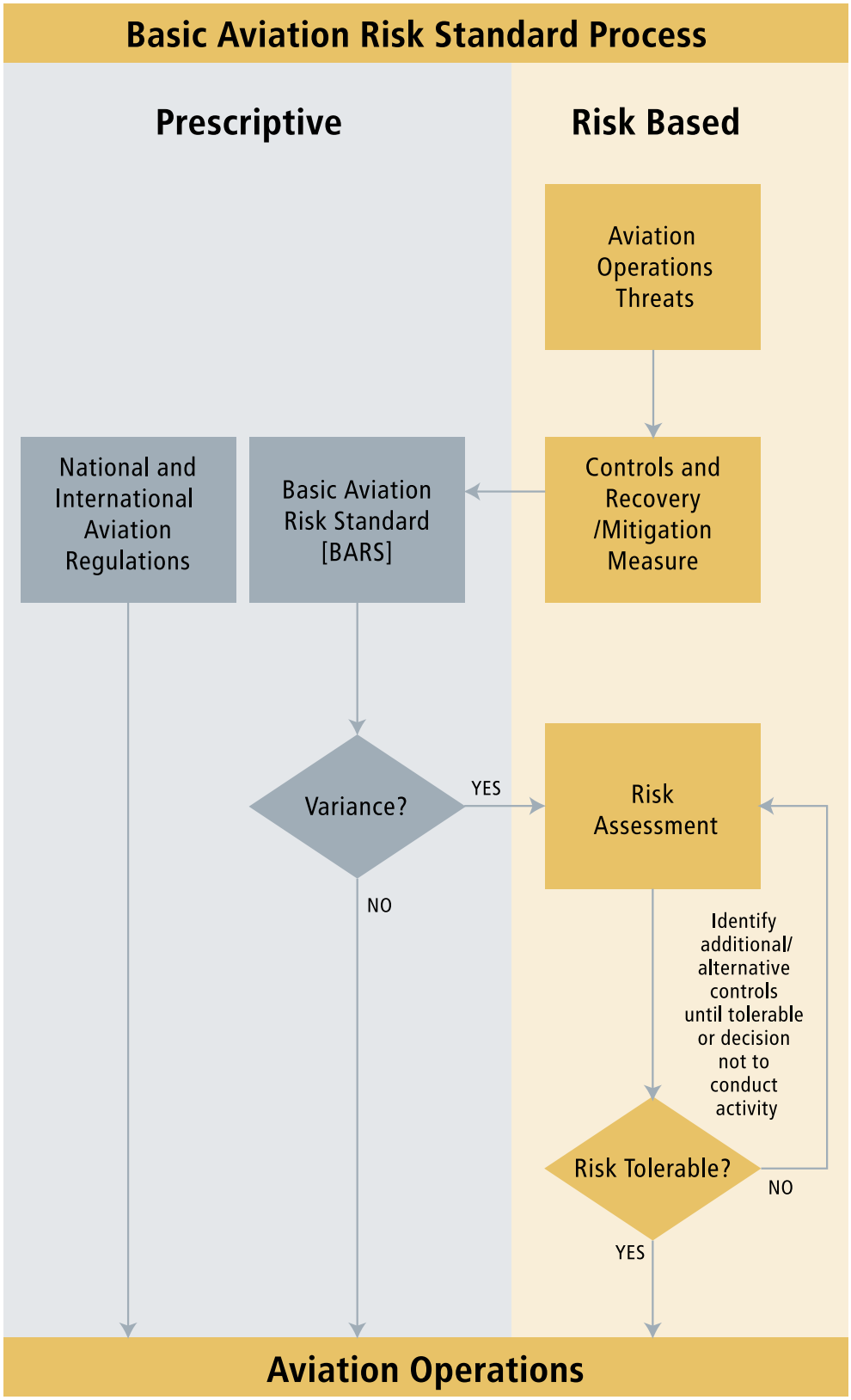
The aircraft operator or approved maintenance organization must have a program for the training of maintenance personnel at least once every three years. The training must include human factors in maintenance, maintenance documentation and procedures and specific training on the aircraft and systems being maintained (refresher training, updates on new modifications or in-service lessons).

Common Control 1.11: Maintenance Personnel Fatigue Management

The aircraft operator or approved maintenance organization must establish a fatigue management policy to minimize the effects of acute and chronic fatigue amongst maintenance personnel. This must include maximum working hour limitations, minimum rest periods and roster schedules, and appropriate management review and approval of any extensions in exceptional circumstances.

The routine rostering of overnight maintenance must be reviewed by a Competent Aviation Specialist to agree if necessary. The rostering of shifts of over 12 hours or minimum rest periods of less than 10 hours should only be considered in exceptional circumstances, must be supported by a risk assessment and must be reviewed by a Competent Aviation Specialist to determine if acceptable.

Figure 2: BARS Process.



Threat 2.0: Heliport and Helideck Obstacles

The helicopter collides with an obstacle on or adjacent to the heliport/helideck

Control 2.1: Heliport and Helideck Design

Use ICAO Annex 14, Volume II ('Heliports') and CAP 437 'Offshore Helicopter Landing Areas' for design considerations when constructing, or performing major rework, to permanent long-term Company owned and operated heliports or helidecks.

Notwithstanding, all new-build helidecks must conform to the standards of ICAO Annex 14 Volume II Heliports and CAP 437 'Offshore Helicopter Landing Areas' and be designed to accommodate the largest helicopter anticipated for use in the life of the structure.

Bow mounted helidecks on FPSOs may require decks with a larger than normal diameter up to 1.5D (D = overall length of the helicopter with rotors turning) due to Pitch Roll and Heave (PRH) considerations. Obtain advice from a Competent Aviation Specialist early in the design process and prior to the final design review.

Consider prevailing winds and the location of adjacent infrastructure/obstacles in relation to the proposed heliport or helideck departure and approach paths.

Control 2.2: Heliport and Helideck Inspections

In addition to reviews required by regulatory authorities, all company owned and/or operated Heliports and Helidecks must have an annual helideck inspection conducted by a Competent Aviation Specialist or aircraft operator. Documented findings and action plans resulting from any inspection must be retained by the Helideck Landing Officer (HLO).

Control 2.3: Heliport and Helideck Assessments

Aircraft operators must conduct landing site assessments prior to commencing operations to validate suitability of performance and operating limitations. Incorporate the results into the operational risk assessment.

Prior to any night operations to new-build helidecks or to helidecks with major changes in lighting there must be a night validation flight that assesses all aspects of the helideck lighting. Consider the following when planning the evaluation flight:

- Use of experienced personnel such as Check and Training Flight Crew;
- Performing the flight as soon as practicable during operational start-up; and
- Assess the night lighting in ambient conditions relevant to the operating environment (as opposed to assessing in a brightly illuminated dry dock/harbour).

Control 2.4: Multiple Helicopters on Helideck Operations

Operations requiring the landing of a second helicopter to an offshore helideck (routinely or for occasional use, such as to support the maintenance of an unserviceable helicopter on deck) must be risk assessed and endorsed by a Competent Aviation Specialist prior to the activity.

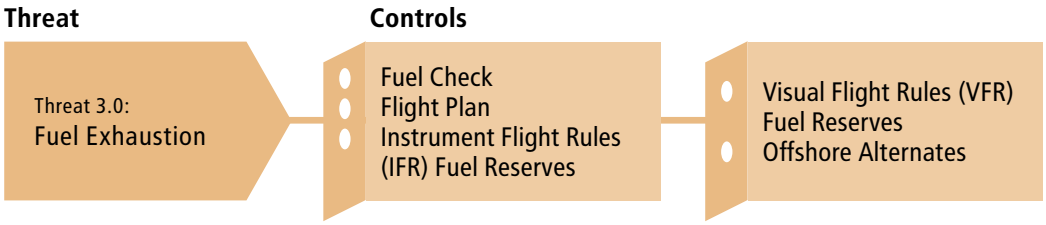
If the potential for multiple helicopter operations exists, a procedure for a second helicopter landing on a helideck must be included in the aircraft operator's Standard Operating Procedures or Operations Manual. Such operations must be limited to daylight only.

Control 2.5: Helicopter/Ship Operations

All helicopter-to-ship operations must be conducted in accordance with the standards contained in the International Chamber of Shipping (ICS) Guide to Helicopter/Ship Operations.

Threat 3.0: Fuel Exhaustion

A helicopter has to conduct a forced landing or ditching after a loss of engine power as a result of fuel exhaustion



Control 3.1: Fuel Check

The aircraft operator must have procedures in place that require the Pilot-in-Command to ensure the required amount of fuel is on-board the aircraft prior to each flight.

Control 3.2: Flight Plan

Offshore flights must be conducted on an Instrument Flight Rules (IFR) flight plan lodged with the relevant air traffic control service provider when possible. Visual Flight Rules (VFR) flight plans are permitted but must be lodged with a responsible party (air traffic control service provider, aircraft operator or company site representative) and flown under a flight-following regime.

Control 3.3: Instrument Flight Rules (IFR) Fuel Reserves

In addition to operational holding fuel requirements, fuel loads must cover fuel used during start-up, taxi, en route, approach and transit to the alternate destination (if required). Additional variable reserves of 10% of the total trip fuel plus 30 minutes flight time as fixed reserve must be carried.

Control 3.4: Visual Flight Rules (VFR) Fuel Reserves

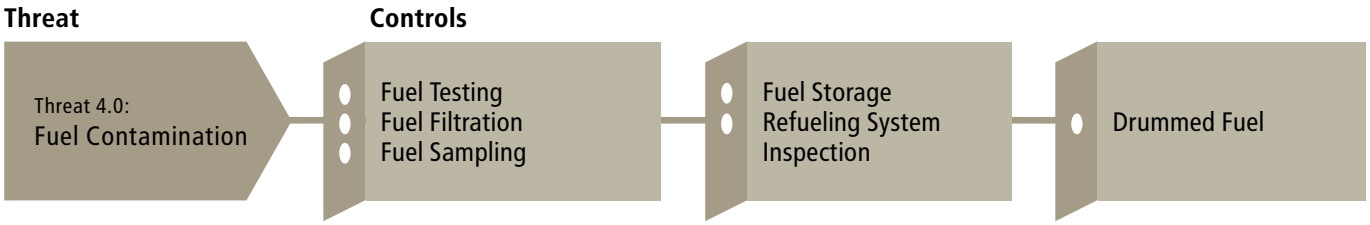
Fuel loads must cover the planned route. An additional variable reserve of 10% of the total trip fuel plus 30 minutes flight time as fixed reserve must be carried.

Control 3.5: Offshore Alternates

One-way fuel computations and offshore-only alternate diversions must not be used unless the offshore destination has been approved for OEI landings by a Competent Aviation Specialist, and, to the extent practical, the alternate helideck availability is guaranteed.

Threat 4.0: Fuel Contamination

A helicopter has to conduct a forced landing or ditching after a loss of engine power due to contaminated fuel



Control 4.1: Fuel Testing

Fuel dispensed to an aircraft must be tested with water detector capsules or an equivalent that is able to test for water in suspension, and visually inspected for contaminants. Where fueling is conducted onshore by a recognized supplier with an effective quality system, an equivalent level of risk management may be demonstrated if appropriate procedures are in place and subject to third-party audit.

Pilots must take (or witness the taking of) a fuel sample from the delivery side of the fuel system and as close to possible to the delivery nozzle of all offshore refueling installations prior to each refueling operation.

The Pilot-in-Command must verify that the quality of the fuel being uplifted is acceptable for operation of the aircraft.

Control 4.2: Fuel Filtration

Fuel delivery systems, including portable/mobile systems, must be fitted with water blocking filtration of the 'Go/No-Go' types. Filter canisters must be marked with the next date of change or inspection cycle. All filters must be replaced at least annually or at specified pressure differentials as annotated on the filter housing or as recommended by the manufacturer.

Where fueling is conducted onshore by a recognized supplier with an effective quality system, an equivalent level of risk management may be demonstrated if appropriate procedures are in place and subject to third-party audit.

Control 4.3: Fuel Sampling

A fuel sample, taken from each aircraft fuel tank sump prior to the first flight of the day, must be retained by the aircraft operator until the completion of the day's flying.

A fuel sample, taken from the fuel storage facility sump, which must be the lowest point in the system, must be retained until the completion of the day's flying.

An additional sample must be taken after fuel storage facility resupply, having allowed the fuel to settle one hour per one foot of fuel depth (or three hours per meter). Fuel must not be dispensed until after the sample has been inspected and the sample retained until the completion of the day's flying.

A fuel sample, taken from each delivery nozzle each day prior to first use, must be retained until the completion of the day's flying.

All fuel samples must be tested using water detector capsules, or an equivalent that is able to test for water in suspension, and visually inspected for contaminants prior to storage in a clear glass jar with screw-top-lid, appropriately labeled.

Control 4.4: Fuel Storage

Additional storage requirements:

- Fuel Certificates of Release should be inspected prior to resupply commencing and be retained;
- Storage tanks must have floating suction or minimum standpipe;
- Bulk deliveries must be filtered into storage tanks;
- Fuel systems must be identified by a placard during the settling period indicating the time when settling will be completed;
- Steel tanks must be lined with an approved epoxy liner unless the tanks are constructed of stainless steel; and
- Company new-build fuel systems must have stainless steel and connection welded plumbing.

Control 4.5: Refueling System Inspection

An annual inspection of fuel storage facilities and delivery systems must be conducted by the company designated Competent Aviation Specialist or aircraft operator. The inspection must include a review of the condition of the facility, scheduled maintenance, microbe growth detection and refueling procedures (covering daily testing, sampling and sample retention practices).

Where fueling is conducted by a recognized supplier, with an effective quality system, using internationally accepted practices, an equivalent level of risk management may be considered as being in place if all applicable procedures are being complied with.

Control 4.6: Drummed Fuel

Aircraft operators who make use of drummed fuel in the course of their operations must have a procedure in place addressing the management and use of drummed fuel stock. The following performance requirements must be addressed:

Storage:

- Drums must be stored:
  - horizontally with access bungs at the 3 and 9 o'clock positions; or
  - vertically with drum top cover in place to prevent the accumulation of water on the drum lid; and
- Drums must have minimal contact with the ground (using wooden slats or equivalent) and be stored under cover.

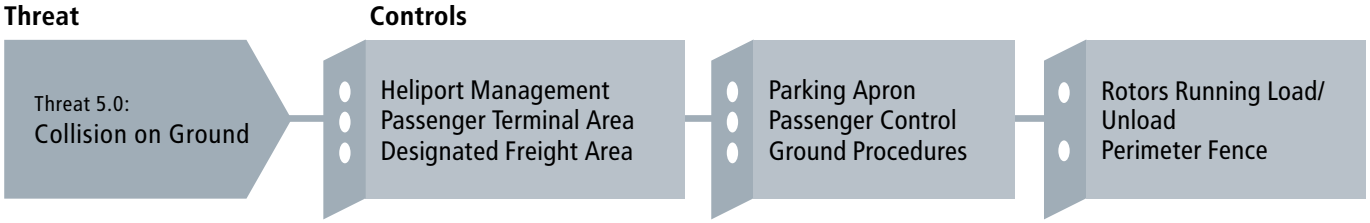
Quality:

- Fuel must be consumed within its Aviation Release Note certification date. Where authorized testing of out-of-date fuel is permitted by the fuel provider and the original certification period is extended, drummed fuel may be used up until that date but not exceeding two years. The revised certification documentation must be retained for the duration the drummed fuel is held in stock;
- The access bungs must be tight and the seals unbroken prior to use;
- The fuel must be sampled and include a positive test for the presence of water using water detecting capsules or paste;
- The refuel pump must be equipped with a Go/No-Go filter; and
- Before fueling the aircraft, a small amount of fuel must be pumped into a container to remove any contaminants from the hose and nozzle.

To provide optimum opportunity for any contaminants to settle, drums must be brought to the vertical three hours prior to testing. Where this is not practical (e.g. SAR, Emergency Response, etc.) all performance requirements of this control must be followed.

Threat 5.0: Collision on Ground

A helicopter and vehicle/person/debris collide on the ground



Control 5.1: Heliport Management

All heliports must have personnel who are responsible for overseeing and managing the heliport operating standards. Personnel designated as being responsible must understand the heliport's procedures, local aviation regulations and certification requirements of the heliport.

Control 5.2: Passenger Terminal Area

Heliports must have passenger facilities offering a waiting area, survival suit issue and donning area (if required), suitable briefing area, security, basic amenities, protection from the elements and a barrier from the aircraft movement area. Incoming and outgoing passenger routes must be designated.

Control 5.3: Designated Freight Area

Heliports must have a designated and secure freight area that provides a controlled environment clear of the aircraft movement area and public thoroughfare.

Control 5.4: Parking Apron

For all routinely used heliports, the parking apron area must be assessed by the aircraft operator as being suitable for their type of aircraft. Consider other transient aircraft traffic, helicopter operations, refueling and the Pavement Classification Number (PCN). For long-term contracts, where practical, taxi lines appropriate for the contracted aircraft type must be painted on the apron for obstacle-clearance maneuvering purposes.

Control 5.5: Passenger Control

A designated Passenger Control Officer (PCO) or Helideck Landing Officer (HLO) who is in a position to communicate with the crew at all times must control all passenger movements to and from the designated aircraft movement area. The PCO can be provided by the company or aircraft operator, and may be a crew member in a multi-crew operation.

The PCO and HLO must be identified using a distinguishing vest (or equivalent) if they are not a crew member of the aircraft.

Control 5.6: Ground Procedures

The Operations Manual must include requirements on ground handling and the maneuvering of aircraft including ground taxiing, towing and passenger loading procedures.

Control 5.7: Rotors Running Load/Unload

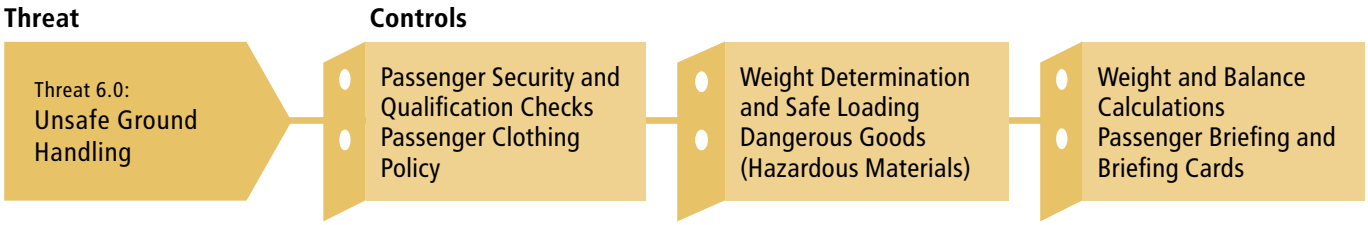
When loading or unloading passengers from helicopters with rotors running, a member of the flight crew must remain at the controls and only perform cockpit duties related to the identification of external hazards and passenger movement around the aircraft. The transfer of passengers whilst the rotors are running must be supervised by a designated PCO or HLO.

Control 5.8: Perimeter Fence

Long-term onshore heliports must have a perimeter fence to prevent access by livestock, other animals and unauthorized pedestrians or vehicles.

Threat 6.0: Unsafe Ground Handling

Unsafe loading of passengers and/or their lack of proper safety awareness, unsafe loading of cargo, unsafe external load handling or unsafe hot refueling



Control 6.1: Passenger Security and Qualification Checks

The aircraft operator or heliport operator must ensure that an appropriate process is in place, prior to boarding, to verify the identity of passengers, verify they meet safety training, medical or other currency requirements, search for prohibited items (prohibited either in-flight or at the destination) and deny boarding to passengers who are disruptive or showing signs of either alcohol or substance abuse. The aircraft operator must also have a process to conduct inbound, onshore security checks in accordance with any local regulations or company contractual requirements.

Control 6.2: Passenger Clothing Policy

A clear passenger clothing policy must be agreed with the Company Aviation Specialist. Passengers must wear clothing and footwear appropriate to the environment being flown over (regardless of the flight duration) and compatible with survival and safety equipment the passenger is to be equipped with. Passengers must be prohibited from wearing any type of headgear.

Control 6.3: Weight Determination and Safe Loading

Actual passenger weight (including hand luggage) must be determined and used in all aircraft weight and balance calculations.

Items of baggage and cargo must be separately weighed and detailed on the manifest.

Items other than soft cover books or securely bound magazines must be prohibited from being taken into the cabin by passengers. Carry-on baggage, including, briefcases, laptop computers and newspapers must not be permitted in the cabin and all baggage must be secured in the baggage compartment. The area below seats must not be used for baggage or other items.

If cargo is carried inside the passenger cabin during passenger carrying operations, it must be secured using nets and straps and hard-points that are suitable for the purpose and placed in front of the passengers where practical.

Cargo must not obstruct the normal or emergency exits.

Control 6.4: Dangerous Goods (Hazardous Materials)

The aircraft operator must comply with current International Air Transport Association (IATA) Dangerous Goods requirements (or similar requirements such as Title 49 of the US Code of Federal Regulations).

Irrespective of whether Dangerous Goods are to be carried, the aircraft operator or Heliport operator must have appropriate procedures and trained personnel to screen all cargo, baggage and passengers for Dangerous Goods. All flight crew must complete Dangerous Goods awareness training at least every two years.

If Dangerous Goods are to be carried, the aircraft operator must have appropriate procedures, facilities and trained personnel for the acceptance, storage and movement of Dangerous Goods.

Control 6.5: Weight and Balance Calculations

Prior to takeoff, the Pilot-in-Command must ensure that the aircraft weight and center of gravity have been calculated and are within limits for safe flight. The weight and balance calculations must be accomplished by a means authorized by the Operations Manual, and the details must be available in the cockpit at all times.

Control 6.6: Passenger Briefing and Briefing Cards

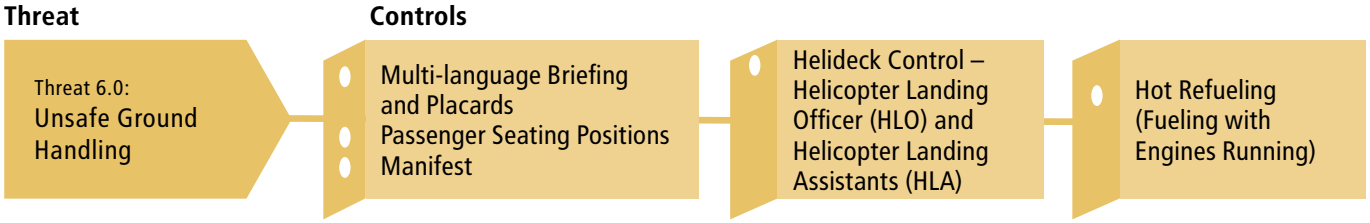
Passengers must be briefed on emergency procedures and the safety matters prior to flight, including:

- A general description of the helicopter and specific avoid/danger areas;
- Smoking restrictions;
- Instructions on the limitations of use of Personal Electronic Devices (PEDs);
- Boarding and disembarkation instructions;
- The use of seat belts and shoulder harnesses;
- The proper donning and use of survival suits, including the use of any hoods or gloves;
- The brace position;
- Immediate actions upon a ditching;
- Demonstration on the use of life jackets and emergency breathing system used in that helicopter;
- The location and use of normal and emergency exits;
- Liferaft deployment and boarding;
- All other safety and survival equipment;
- The means of communication between crew and passengers; and
- The location of non-smoking and fasten seatbelt signs and briefing cards.

The briefing must cover the specific design features and equipment of the aircraft to be used.

This briefing must be presented in video format.

When the aircraft to be used has minor configuration differences to that shown in the video safety briefing, a verbal briefing to a documented script either on the aircraft or with reference to illustrations of the differences must be provided before flight.



Differences are minor if they are readily comprehensible, easy to identify on the aircraft, small in number, don't introduce a new risk of injury if misused and don't have an adverse effect on survivability. If the differences are major, a dedicated video must be used for that configuration.

All passengers must have access to a passenger briefing card specific to the aircraft configuration in use when seated.

The aircraft operator must have a procedure in place to ensure passengers are briefed after any sudden descent, return to base, or any other event that may cause concern.

Control 6.7: Multi-language Briefing and Placards

When the first language in the area of operations is not English, the aircraft operator must provide aircraft emergency placards, passenger briefings cards and briefings in the local language as well as English. For videos this may be achieved by sub-titles.

Control 6.8: Passenger Seating Positions

Passengers must be seated on the aircraft cognizant of emergency exit/push-out window sizes. Larger passengers, in particular those with large shoulder sizes, must be seated on rows adjacent larger exits. First time travelers should only be seated next to an emergency exit/push-out window when they are not between another passenger and that passenger's most direct egress route.

Control 6.9: Manifest

A manifest that accurately reflects the occupants and cargo of the aircraft must be completed for each flight or sector in accordance with the Operator's approved procedure. The manifest must record the full name of each passenger and this data must be accessible by flight following personnel at all times to aid any emergency response.

Control 6.10: Helideck Control – Helicopter Landing Officer (HLO) and Helicopter Landing Assistants (HLA)

All offshore installations must have a HLO available for all helicopter movements with relevant duties and responsibilities clearly outlined in a current and up-to-date HLO Manual. HLO and assistants must undergo initial and recurrent training every two years in accordance with OPITO standards (or an acceptable alternative standard).

Any personnel designated as an HLA must also receive formalized training from an approved HLO and where possible participate in periodic emergency drills.

In addition to standard Personal Protective Equipment (PPE), all helideck personnel must wear and be identified by a high visibility vest (or equivalent).

Prior to initial operations to a helideck, qualified personnel from the aircraft operator must brief relevant offshore personnel in the safe operating practices and procedures for the helicopter type being operated.

Where operations are to be conducted to Normally Unattended Installations (NUIs) where the helideck will be unmanned during the approach and landing or is to be left unmanned on departure, both the aircraft operator and the company must have procedures applicable to such operations.

Control 6.11: Hot Refueling (Fueling with Engines Running)

Hot refueling must only be conducted when considered operationally necessary. Hot refueling with gasoline and wide cut turbine fuel is prohibited.

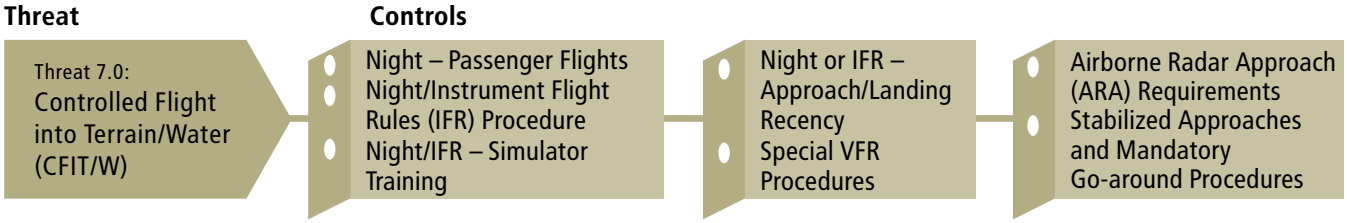
If conducted, aircraft operators must have a procedure for hot refueling which includes the following requirements:

- No passengers are to be on-board during refueling unless the Pilot-in-Command assesses that it is safe to do so. Passengers must receive a safety brief prior to refueling. No side-well seats are to be occupied (e.g. Bell 212, 214, 412);
- Firefighting capability must be available and manned;
- The aircraft operator's Operations Manual must detail all aspects of hot refueling, including personnel training, sequence of aircraft grounding and duties of personnel required. A minimum of three personnel for helicopter operations – one for refueling, one for pump shut-off and one for fireguard;
- Radios must not be used during refueling unless in emergency circumstances;
- Prior to removing the fuel cap and inserting the fuel nozzle into the aircraft fuel tank, or connecting a pressure hose, bonding wires running from the fuel station and from the fuel hose to the aircraft must be connected;
- When refueling is completed, the flight crew member must verify that all equipment is removed, the fuel cap has been securely replaced and the aircraft is properly configured for flight; and
- Correct fuel loads must be confirmed by the Pilot-in-Command prior to departure.

Refueling while an Auxiliary Power Unit (APU) is running but without engines operating does not constitute hot refueling.

Threat 7.0: Controlled Flight into Terrain/Water (CFIT/W)

An airworthy helicopter under the control of flight crew is flown into the ground (or water)



Control 7.1: Night – Passenger Flights

A risk assessment by the aircraft operator must be performed before commencing night passenger flights from a new operating location (or upon changes in local SAR capability). The risk assessment must include:

(1) The existence, availability and effectiveness of available night SAR resources;

(2) SAR response times; and

(3) Survival times of personnel given environmental conditions and mitigating measures (such as survival suits).

Control 7.2: Night/Instrument Flight Rules (IFR) Procedures

Flights flown at night or in IFR must be operated by two-pilots who hold valid and current instrument ratings using Standard Operating Procedures (SOPs) contained in the Operations Manual.

Flights flown at night or under IFR must be conducted in a multi-engine helicopter and must be in compliance with an IFR flight plan.

Control 7.3: Night/IFR – Simulator Training

For long-term contracts, crews operating at night or under IFR must attend initial and recurrent simulator training (with a frequency of not less than every 24 months). Flight Training Devices may be used when they are available for that aircraft type and endorsed by a Competent Aviation Specialist.

Control 7.4: Night or IFR – Approach/Landing Recency

IFR and night approach recency must comply with the responsible regulatory authority's requirements, but shall include at least three night takeoff and landings for each pilot in the preceding 90 days.

Control 7.5: Special VFR Procedures

Routine planned use of Special VFR procedures must only be used in a two-crew operation and only in a non-hostile environment and only if endorsed by a Competent Aviation Specialist.

Control 7.6: Airborne Radar Approach (ARA) Requirements

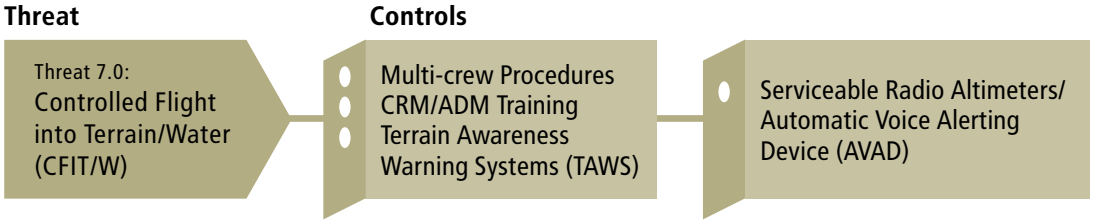
For operations at night or under IFR to offshore destinations, air operators must have defined ARA procedures that require:

- Consideration of the location of all known fixed and moving obstacles;
- The use of a radar to provide course guidance to ensure obstacle clearance;
- A Minimum Descent Height (MDH) not less than 50ft above the helideck, determined by radio altimeter;
- A decision range of at least 3/4nm with adequate obstacle clearance in the missed approach from any destination for which an ARA is planned; and
- That the approach shall only be continued beyond decision range or below the MDH when visual reference with the destination has been established.

Control 7.7: Stabilized Approaches and Mandatory Go-around Procedures

Aircraft operators must include type-specific stabilized approach requirements in the Operations Manual.

Aircraft operators must include no-fault, mandatory go-around requirements in the Operations Manual. In addition the company must support go-arounds on a no-fault basis to further support this Control.



Control 7.8: Multi-crew Procedures

Where multi-crew operations are conducted, procedures outlining the duties and responsibilities of all flight crew members must be prescribed by the; specifically 'Pilot Flying' and 'Pilot Monitoring' roles and tasks are to be defined.

Control 7.9: CRM/ADM Training

All crew must have successfully completed Crew Resource Management (CRM) or Threat and Error Management (TEM) training at intervals not exceeding two years. Completion of an Aeronautical Decision Making (ADM) course is acceptable for approved single-pilot operations.

Control 7.10: Terrain Awareness Warning Systems (TAWS)

Aircraft that are to fly under IFR or at night or over mountainous terrain must be fitted with a serviceable Class A Helicopter TAWS, certified in accordance with an appropriate Technical Standards Order. Alternatively for operations under IFR or at night over non-mountainous terrain an Automatic Voice Alerting Device (AVAD), using radio altimeter data may be installed if justified as sufficient by risk assessment agreed with the company's Competent Aviation Specialist.

The aircraft operator must have procedures for any user adjustable TAWS features, ensuring regular database updates and for actions to be taken by the flight crew in the event of an alert.

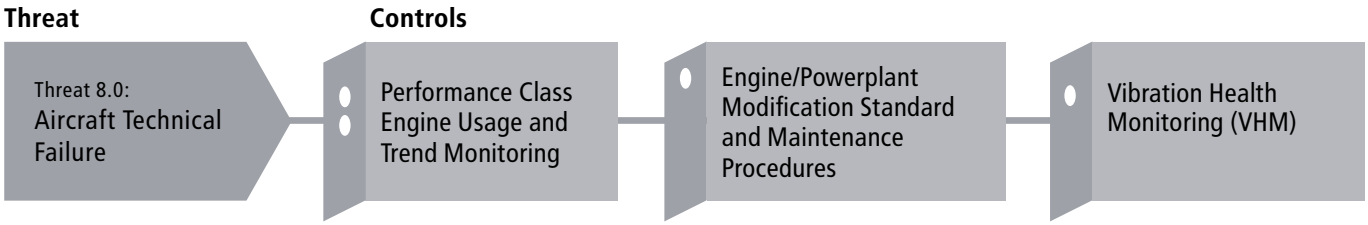
Control 7.11: Serviceable Radio Altimeters/ Automatic Voice Alerting Device (AVAD)

All offshore helicopters must be equipped with at least one radio altimeter with dual displays (including analogue indication), with a visual alert and AVAD capability, which must be serviceable for any flight at night or flight conducted under IFR (even if these are deferrable in the regulatory approved MEL). Visual/audio alerts may alternatively be provided by TAWS.

The aircraft operator must have procedures for any user adjustable AVAD features and for actions to be taken by the flight crew in the event of an alert.

Threat 8.0: Aircraft Technical Failure

Structural or propulsion/mechanical/avionic system failures of the helicopter that result in accident or escalate another threat



Control 8.1: Performance Class

Only multi-engine helicopters certified in Part 27/29 Category A operating in Performance Class (PC) 1 and PC2 are to be used in a hostile environment, at night or in instrument meteorological conditions.

For PC2 operations from offshore helidecks with exposure to a forced landing on water or a deck edge strike, departure procedures must be followed that take into account all available Flight Manual data.

Helicopters operating in PC3 (which includes all single-engine helicopters and multi-engine helicopters that are not certified in Part 27/29 Category A) must be limited to use in a non-hostile environment, under day visual meteorological conditions. All daytime offshore flights using PC3 Helicopters must be scheduled so that they land at least 30 minutes prior to official sunset.

Piston engine helicopters must not be used in offshore operations.

Control 8.2: Engine Usage and Trend Monitoring

All helicopters operating on a long-term contract to be flown PC3 or PC2 with exposure (see Control 8.1) must be fitted with an electronic engine usage and trend monitoring system. The aircraft operator must follow procedures to routinely download the system, analyze engine trend data and take necessary actions so as to minimize the probability of engine failures.

Control 8.3: Engine/Powerplant Modification Standard and Maintenance Procedures

All helicopters operating offshore on a long-term contract to PC3 or PC2 with exposure (see Control 8.1) must comply with any recommended modification standards or maintenance procedures issued by the engine or aircraft Type Certificate Holders to reduce loss of power events.

Control 8.4: Vibration Health Monitoring (VHM)

Multi-engine helicopters on long-term contract must be fitted with an approved VHM system capable of monitoring the rotor and rotor drive systems. VHM is recommended on single-engine helicopters when available.

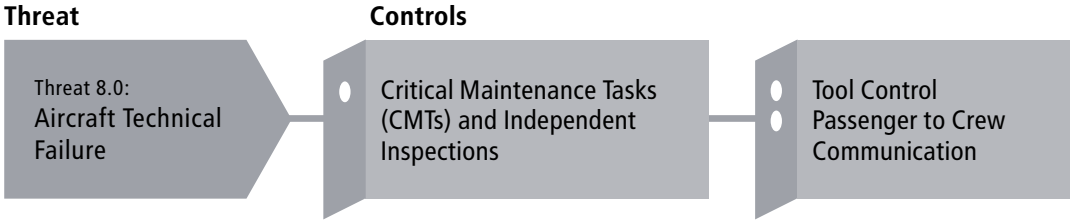
The VHM system must measure vibration characteristics of rotating critical components during flight utilizing suitable vibration sensors, techniques, and recording equipment. Alert generation processes must be in place to reliably advise maintenance personnel of the need to intervene and help determine what type of intervention is required. The VHM system must be certified to CS-29.1465 or an equivalent VHM regulatory standard. The VHM system must be undergoing, or have previously completed, a Controlled Service Introduction under the oversight of a regulatory authority who has certified the helicopter type.

The operator must have documented procedures and trained personnel to:

(1) Collect the data including system generated alerts;

(2) Analyze and determine component serviceability; and

(3) Respond to detected incipient failures.



Control 8.5: Critical Maintenance Tasks (CMTs) and Independent Inspections

Maintenance tasks that involve the assembly or disturbance of any system that may affect flight path, attitude, or propulsive force, which, if errors occurred, could result in a failure, malfunction, or defect that would endanger the safe operation of the aircraft must be considered as a CMT.

CMTs must be clearly identified in maintenance worksheets or job cards.

CMTs must be subject to an Independent Inspection in accordance with established procedures, carried out by at least two persons, at least one of which is qualified and authorized to sign the Maintenance Release.

Control 8.6: Tool Control

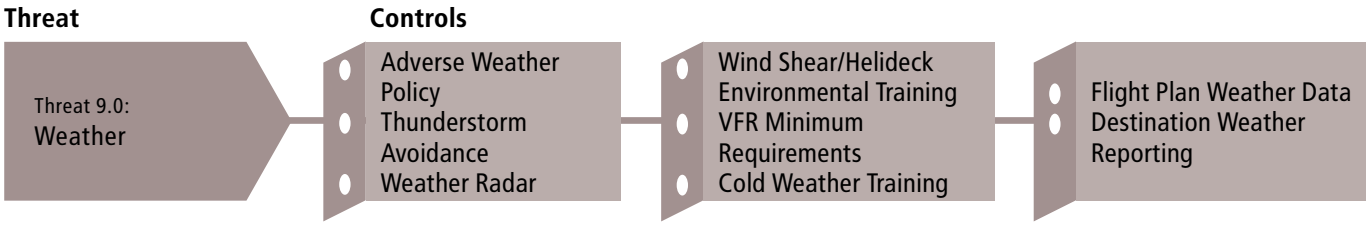
The aircraft operator must have procedures in place to control all tools, including (but not limited to): tool inventories, serialized marking of tools (or equivalent), controlled issue and return of tools, specific tool storage locations, routine inspection/monitoring of tool storage locations and inspections of the aircraft before panel/compartment closures.

Control 8.7: Passenger to Crew Communication

Passengers must be able to communicate with the crew in the event of a technical problem being observed (e.g. a fluid leak). For aircraft where the cockpit is separated from the cabin (for example in a medium helicopter where the front row of passenger seats face aft) means of communication can include access to a headset for a designated passenger or carriage of a crew member.

Threat 9.0: Weather

Weather and/or other environmental conditions force a helicopter to deviate from its intended flight path and results in an accident or prevents effective search and rescue



Control 9.1: Adverse Weather Policy

An Adverse Weather Policy must be developed by the company in conjunction with the aircraft operator when weather conditions exist that are suitable for flying, but not suitable for practical offshore operations or search and rescue. Situations can include: excessive wind over helidecks prohibiting personnel movement to and from the helicopter, adverse sea conditions resulting in an unacceptable risk of immediate capsize or preventing effective offshore search and rescue, or man-made smoke haze degrading visual conditions in a jungle environment. The Adverse Weather Policy must outline clearly under what conditions flying operations should be restricted or temporarily halted and supported by appropriate procedures. The Adverse Weather Policy must consider the aircraft type and survival equipment in use, the available SAR capability and applicable Emergency Response Plans and be revalidated when material changes to these considerations occur.

Control 9.2: Thunderstorm Avoidance

Aircraft operators must outline thunderstorm avoidance techniques in the Operations Manual.

Control 9.3: Weather Radar

All aircraft contracted to be able to operate under IFR or at night must be fitted with a serviceable color weather radar having a minimum range scale of 2.5nm with one half nm range scale graduations. If the weather radar becomes unserviceable, the aircraft must not be flown in Instrument Meteorological Conditions (IMC), or at night unless the weather forecasts indicate there is no likelihood of thunderstorms, lightning, turbulence or icing.

Control 9.4: Wind Shear/Helideck Environmental Training

Flight crew on long-term contract must have ongoing training addressing the identification and recovery measures associated with microburst and wind shear phenomenon, turbulence created by wind over an offshore facility's superstructure and gas venting.

Control 9.5: VFR Minimum Requirements

Aircraft operating under VFR must be flown in accordance with the minimum local regulatory requirements for flight under the VFR for departure, en route and destination legs.

Control 9.6: Cold Weather Training

Crew who operate aircraft in a cold weather environment (ground snow and ice) must undergo annual training prior to the onset of the winter season that addresses:

- Pre-takeoff inspections;
- In-flight icing and associated hazards;
- Cold weather operational takeoff, approach and landing; and
- Visibility and performance considerations.

Control 9.7: Flight Plan Weather Data

Flight crew must be provided with reliable weather information when determining fuel loads during pre-flight planning.

Control 9.8: Destination Weather Reporting

The following data must be communicated to arriving aircraft by either an Automatic Weather Observation System (AWOS) and/or trained weather observer:

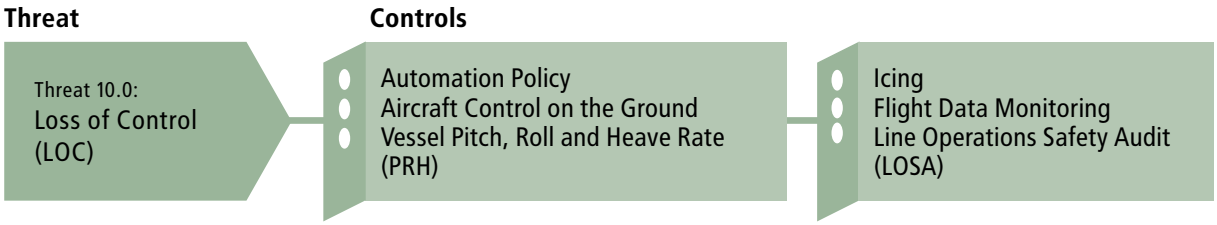
- Maximum pitch and roll (degrees) and heave rate (meters/second) over a 20-minute period (offshore destinations);
- Wind direction and speed;
- Temperature;
- Barometric pressure; and
- Cloud ceiling height and visibility.

Additionally, when operating in a hostile environment to offshore destinations wave height and the status of the local rescue capability (e.g. stand-by vessels, fast rescue craft, offshore based SAR helicopters, etc.) must be communicated to arriving aircraft.

All equipment must be maintained and calibrated to a defined schedule and recorded in a calibration register.

Threat 10.0: Loss of Control (LOC)

Loss of aircraft control of the aircraft while on the ground or in-flight



Control 10.1: Automation Policy

An Autopilot or Automatic Flight Control System (AFCS) must be fitted for night or IFR flights.

Where an Autopilot or AFCS is fitted the aircraft operator must have an automation policy that ensures the appropriate use of automation to reduce cockpit workload. The policy must also include procedures for manual flight control to maintain flight proficiency.

Control 10.2: Aircraft Control on the Ground

A pilot must remain at the controls of the helicopter at all times aircraft engines are running.

Control 10.3: Vessel Pitch, Roll and Heave Rate (PRH)

The Pitch, Roll and Heave of floating vessels must be measured as close to helideck level and centerline as possible in order to provide accurate and reliable readings to be communicated to the helicopter from the vessel.

Significant changes in PRH or in vessel direction or any circumstance were vessel control is lost must be reported to the helicopter crew both prior to landing and while on the helideck.

The aircraft operator must have aircraft specific pitch, roll and heave rate landing limits (such as the Helideck Certification Agency Helideck Landing Limits) documented in their Operations Manual. The flight crew must verify that the reported PRH is within limits before landing.

Control 10.4: Icing

Where an aircraft is intended to be operated into known icing conditions it must be certified for operation in icing conditions and all icing related systems must be serviceable. Aircraft certified for limited icing (i.e. without full rotor de-icing but with the ability to descend to lower, warmer altitudes, when ice build-up reaches a threshold) are acceptable but must not be used for flight into known icing conditions over frozen seas or other areas that lack warmer air at low altitude.

Control 10.5: Flight Data Monitoring

For long-term contracts the aircraft operator must have a Flight Data Monitoring program as part of its SMS to systematically analyze and make pro-active use of digital flight data from routine operations to reduce risk and provide operational feedback.

Refer to Helicopter FDM Industry Best Practice document (www.hfdm.org).

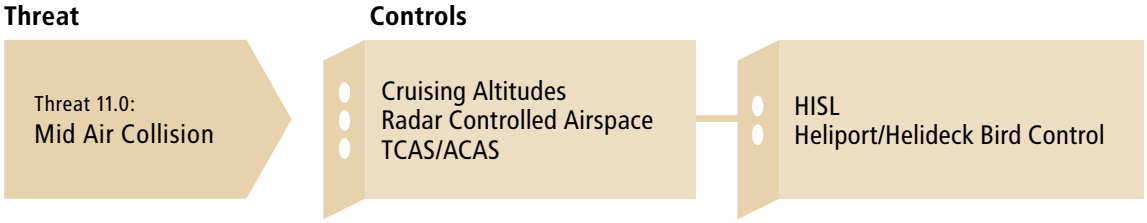
Control 10.6: Line Operations Safety Audit (LOSA)

For long-term contracts the aircraft operator must have a LOSA program as part of its SMS. This must be a structured program, using trained observers to collect data on routine flights, on a de-identified, non-punitive basis, on flight crew response to threats and errors. The data must be analyzed and appropriate action plans implemented. The LOSA program need not involve observations of the contracted operation if an appropriate sample is taken of comparable operations (e.g. offshore operations with similar aircraft types, flying to similar procedures, in similar environments). The LOSA observations may be conducted periodically in observation campaigns, but these must be conducted at least every three years.

See *Flight Safety Digest* Volume 24 No 2, Nov – Feb 2005.

Threat 11.0: Mid Air Collision

A helicopter and object collide in the air



Control 11.1: Cruising Altitudes

Flight crew must comply with the ICAO cruising altitudes for both VFR and IFR flight unless circumstances require non-standard procedures. Where known bird migratory routes or bird reserves are identified, flight crew must plan cruise altitudes greater than 3,000 feet Above Ground Level (AGL) where practical.

Control 11.2: Radar Controlled Airspace

The Pilot-in-Command must consider the use of Air Traffic Controlled or Monitored airspace when determining cruising altitudes utilized during flight.

Control 11.3: Traffic Collision Avoidance System (TCAS)/Airborne Collision Avoidance System (ACAS)

Aircraft to be flown in a High Traffic Risk Environment (HTRE) on long-term contract for operations at night or under IFR must be fitted with a TCAS2/ACAS2 system that provide both traffic advisories and resolution advisories.

All aircraft to be flown in a HTRE on long-term contract must be fitted a TCAS/ACAS that provides at least traffic advisories.

The aircraft operator must have a procedure describing the action to be taken for TCAS/ACAS alerts.

Control 11.4: High Intensity Strobe Lights (HISL)

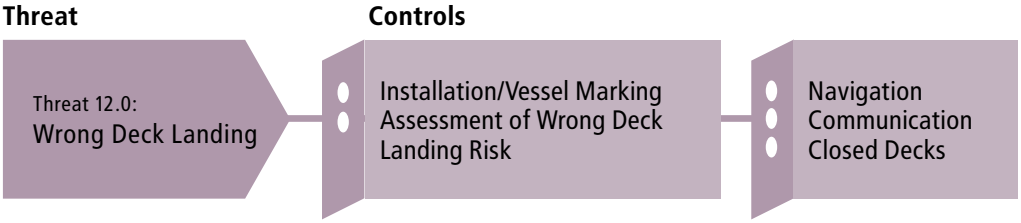
Aircraft on long-term contract operating in a HTRE must have high intensity strobe or pulse lights fitted (in addition to the standard red anti-collision beacons).

Control 11.5: Heliport/Helideck Bird Control

Passive bird control measures must be adopted at all onshore heliports and helidecks (where applicable) to manage the immediate habitat and sources of food. Active bird control must be conducted at all onshore heliports when required. Where possible, birds must be dispersed or removed in accordance with local wildlife regulations.

Threat 12.0: Wrong Deck Landing

A helicopter lands on (or comes into the hover over) the wrong helideck, escalating the risk of other threats, reducing defences if the helideck crew are not prepared and posing a hazard to personnel on the installation



Control 12.1: Installation/Vessel Marking

The marking of installations and vessels must be such that the crew of an approaching helicopter can visually verify identity before or at the Landing Decision Point. Where similar installation/vessels are in the same area, special care must be taken to make markings unambiguous. Flight crew must have approach plates accessible during flight planning and when airborne that assist in the visual identification of the destination and adjacent installations and vessels.

Control 12.2: Assessment of Wrong Deck Landing Risk

Aircraft operators must have a process to identify the relative risk (e.g. high, medium or low) of a wrong deck landing at a particular destination or vessel during flight planning. This should consider factors such as proximity of adjacent decks, physical similarity of adjacent installations or vessels, similarity in naming conventions etc. Aircraft operators must have procedures to verbalize this risk during all pre-flight briefings and (if practical) in pre-landing briefings (unless it can be demonstrated the risk in that area is continuously low).

Control 12.3: Navigation

The location of mobile vessels must be communicated to Aircraft operators and be readily available in the flight planning area. Flight crew must confirm the location of mobile vessels (both the destination [if applicable] and those adjacent to the destination) before flight. Position must be verified on approach to all installations and vessels.

Control 12.4: Communication

For manned installations and vessels there must be procedures to verify that the helicopter is on approach to the correct destination and an ability to provide feedback by radio or, if practical, other means.

Control 12.5: Closed Decks

If a helideck is closed (for any reason other than simply it is unmanned) it must be clearly marked as such.

Defences 20.0: Aircraft Accident

Mitigating defences in the event of an aircraft accident

IMPACT SURVIVAL

Defence 20.1: Aircraft Certification Standards

Aircraft designed to the latest certification standards have increased crashworthiness, survivability characteristics and other design safety features when compared to those aircraft certified to older standards (e.g. crashworthy seating, crash resistant fuel systems, ditching performance etc).

The aircraft operator and company must consider the certification basis of the aircraft type (normally defined within the Type Certificate Data Sheet [TCDS]) and subsequent modifications, including any Special Conditions, Equivalent Levels of Safety and Exemptions, and other design evidence when appropriate, when offering/selecting aircraft for all contracts.

Defence 20.2: Upper Torso Restraint

All helicopter crew and passenger seats must be fitted with upper torso restraints that must be worn at all times. The use of seat belt extensions that interfere with the full effectiveness of the upper torso restraint is prohibited.

Defence 20.3: Public Address (PA) System

The helicopter must be fitted with a PA system of sufficient clarity and volume so that passengers can understand instructions from the crew at all times during flight (even when wearing any hearing protection).

FLOTATION

Defence 20.4: Aircraft Flotation System

Offshore helicopters must be fitted with an emergency flotation system designed to cope with the sea conditions that are reasonably likely in the actual area of operations so as to reduce the risk of capsize before evacuation into liferafts.

Automatic float deployment systems must be fitted on helicopters operated on long-term contracts intended to be operated in offshore in IMC or night conditions, or offshore in a hostile environment.

Note that the success of the flotation system is partly dependent on the application of Control 9.1: Adverse Weather Policy.

UNDERWATER ESCAPE

Defence 20.5: Helicopter Underwater Escape Training (HUET)

All flight crew and passengers must complete a HUET course to a recognized standard (e.g. OPITO) that includes the use of a Modular Egress Training Simulator (METS) at least every four years, unless local regulation requires greater frequency or an established internal variance process has been approved by a Competent Aviation Specialist.

Defence 20.6: Seating Layout

Seating must be laid out so that every occupant has reasonable access to at least one route (and ideally two) for emergency egress through an exit of sufficient size for the occupant when wearing survival equipment, that is within direct sight from their seated position, has suitable hand-hold options en route, has no more than two other occupants (ideally one) between them and escape. This control is also relevant to escape when the helicopter is floating.

Defence 20.7: Emergency Exit Lighting System

Emergency exit lighting system must be fitted to mark all emergency exits and push-out windows in the event of emergency evacuation.

Defence 20.8: Push-out Windows

Emergency push-out windows must be installed in all locations that are suitable for emergency underwater egress (typically those greater than 430mm by 350mm). There must be a suitable means of opening that is resistant to inadvertent operation and which is suitably marked by placards and contrasting color(s).

Defence 20.9: Emergency Breathing Systems (EBS)

EBS compliant with an appropriate standard (e.g. UK CAA CAP1034) must worn by passengers for operations over a hostile offshore environment. Passengers must have received training in EBS use and EBS deployment must be covered in pre-flight safety briefings.

SEA SURVIVAL

Defence 20.10: Life Jackets

Constant wear, passenger life jackets compliant with an appropriate TSO, with design features to prevent the life jacket riding up when in the water, must be worn at all times in offshore operations.

Defence 20.11: Survival Suits

Survival suits, compliant with an appropriate standard, must be provided to crews and passengers for helicopter offshore operations in hostile environments and when required by a risk assessment. The passenger suit, supplemented by the clothing determined by the passenger clothing policy (Control 6.2), must provide thermal insulation consistent the expected SAR recovery time. Passenger suits must be worn fully zipped, although hoods and gloves need not be worn. The suit must be compatible with the life jacket used.

Defence 20.12: Liferafts

For helicopters with a seating capacity of more than nine passengers, two liferafts compliant with an appropriate TSO must be carried. For helicopters with a seating capacity of nine passengers or less, at least one liferaft compliant with an appropriate TSO must be carried.

Where a helicopter is fitted with two liferafts, each must have an overload capacity that is equal or greater to the total occupants of the helicopter. Where helicopter is fitted with one liferaft it must have a normal capacity equal or greater to the total occupants of the helicopter.

For operations in a hostile environment the liferafts must comply with ETSO-2C505 or an equivalent standard for hostile environment liferafts.

All liferafts must be reversible or self-righting, double chambered and capable of being tethered to the aircraft and be readily accessible in the event of ditching.

At least one liferaft (ideally two) must be an external liferaft, with a means of activation available in the cockpit and externally. To prevent in-flight deployment there must not be passenger access to the means of activation in-flight.

The airframe in the vicinity of the liferaft when deploying and when deployed must be free of projections that could damage the liferaft.

LAND/GENERAL SURVIVAL

Defence 20.13: Rescue Firefighting

All heliports or airfields must have a means of providing a fire and rescue capability commensurate with the potential risk. Qualified personnel must receive training on the equipment provided, which must be appropriately maintained.

Defence 20.14: First-Aid Kit and Fire Extinguisher

At least one first-aid kit and one fire extinguisher must be carried and accessible in-flight.

Defence 20.15: Survival Kit

Survival kits appropriate for the geographical location and climatic conditions (offshore, jungle, arctic, desert, etc.) and the number of occupants of the aircraft must be carried for those operations where search and rescue response times would require use of the equipment.

ALERTING

Defence 20.16: Flight Following and Communication

All aircraft operating in hostile environments or used for SAR missions must be fitted with satellite flight following systems. The position reporting frequency must be appropriate for the operation and at least every 2 minutes. The system must be monitored by designated flight following personnel with no secondary duties who are able to initiate the Emergency Response Plan if required. There must be a reliable means of direct communication available between the aircraft and flight follower throughout the flight.

Where flights are conducted outside of controlled airspace in a non-hostile environment, the aircraft operator must establish a system of flight following appropriate for the operation. An Emergency Response Plan must be able to be activated at all times in the event of distress or loss of communications.

Defence 20.17: Emergency Locator Transmitters

An Emergency Locator Transmitter (ELT) meeting the requirements of Technical Standard Order (TSO) 126 or equivalent operating on both 406MHz and 121.5MHz must be fitted to all contracted aircraft.

Defence 20.0 (cont.)

This must be an Automatically Deployable ELT (ADELT) on helicopters on long-term contracts intended to be operated offshore in instrument meteorological or night conditions, or offshore in a hostile environment.

All ELTs must be registered with the appropriate national agency and the responsible parties registered as ELT contacts are to be detailed in the aircraft operator's Emergency Response Plan.

Defence 20.18: Flight Crew PLB

Flight crew operating helicopters in hostile environments must have access to a voice-capable and GPS-capable 406MHz/121.5MHz Personal Locator Beacon (PLB)/Survival ELT and carry any other necessary survival equipment on their person.

Defence 20.19: Passenger PLBs

For operations in any environment where the SAR response time is considered excessive through risk assessment (and therefore wider dispersion of survivors is possible), a 121.5MHz PLB, compliant with an appropriate standard, must be carried (normally attached to the life jacket or survival suit).

SAR/EMERGENCY RESPONSE

Defence 20.20: Emergency Response Plans

All aviation operations (including company owned or operated heliports) must have an Emergency Response Plan (ERP) commensurate with the activity undertaken that covers: documented land-before-last-light limitations, exposure considerations, local Search and Rescue (SAR) capabilities, and hazards associated with the surrounding environment.

ERPs must detail lines of communications between the company and aircraft operator.

Offshore installations and vessels must make provision for aviation emergencies on and around their facilities when developing Emergency Response Plans.

The aircraft operator must conduct a relevant exercise that activates its ERP at least annually either locally or at a regional/corporate level and demonstrate that any necessary improvements are made.

Emergency drills (at a minimum desktop) with aviation related objectives must be conducted within 30 days of a contract's initiation, and then at least annually for ongoing operations that:

- Test the integrity of the ERP by conducting exercises on worst-case scenarios involving last-light, weather and aircraft disposition; and
- Test and validate bridging communications between the company, the aircraft operator and all SAR resources.

Note that the success of the emergency response in the event of a ditching or water impact is partly dependent on the application of Control 7.1 Night – Passenger Flights, Control 9.1: Adverse Weather Policy and the available SAR capability (see also Defence 20.21).

Defence 20.21: Dedicated SAR Support

For all operations in a hostile environment, the company must conduct a risk assessment to determine if contracting for a dedicated SAR capability is necessary to supplement locally available SAR assets. If necessary, such a service must be contracted.

POST-ACCIDENT

Defence 20.22: Cockpit Voice Recorder (CVR)/ Flight Data Recorder (FDR)

Multi-engine helicopters must be fitted with a crash-protected Cockpit Voice Recorder and Flight Data Recorder that meet a recognized recorder and crash protection standard with an attached Underwater Locator Beacon (ULB).

All single-engine helicopters on long-term contract must have some form of either:

(1) Cockpit voice and or image recording capability designed to be crash-resistant; or

(2) Flight data recording capability designed to be crash-resistant, adequate for flight path reconstruction.

Defence 20.23: Insurance

The contracting company must determine the level of insurance they require in accordance with company risk management standards prior to contract commencement. The aircraft operator shall ensure insurance is in place. Such insurance must not be cancelled or changed materially during the course of the contract without at least 30 days written notice to the company. The company must be named as an additional insured under the policy.

Appendices

Appendix 1:

Personnel Qualifications, Experience and Recency

Pilot-in-Command

Qualifications	>5700 kg Multi-engine	<5700 kg Multi-engine	Single-engine
Licence	ATPL	CPL	CPL
Instrument Rating[1]	Command, multi-engine	Command, multi-engine	Not required
Experience			
Total Hours	3000	2500	2000
Total Command	2500	1500	1500
Total Command Night Offshore	25 at night offshore	25 at night offshore	25 at night offshore
Total Command Multi-engine	500	500	N/A
Total Command on Type[2]	100	100	100
Experience in Topographical Area	One year experience in area similar to specified in contract (arctic, offshore, high density altitude mountainous, jungle, international operations, etc).		

Co-pilot

Qualifications	>5700 kg Multi-engine	<5700 kg Multi-engine	Single-engine
Licence	CPL	CPL	CPL
Instrument Rating	Command	Co-pilot	
Experience			
Total Hours	500	250	250
Total Multi-engine	100	50	
Total on Type[2]	50	10	10

Both Pilot-in-Command and Co-pilot

Qualifications	
Total Hours previous 90 days[3]	50 hours, ten on the aircraft type
Night recency previous 90 days	Three night takeoffs and landings[4] [5]
Night helideck recency – previous 90 days	Three night helideck takeoffs and landings[4] [5]
CRM/ADM initial and refresher	Every two years
Dangerous Goods Awareness	Every two years
Accident and Violation Record	At least two years free of causing air accidents due to gross negligence or violations of regulations or procedures, subject to review by the company.

Maintenance Personnel

Qualifications	Chief Engineer	Certifying Engineer
Total time on Helicopters (whichever applicable)	Five years	Two years
Licence with appropriate Engine/Airframe/ Avionics Rating	Yes	Yes
Type Rating on the contract type[6]	Yes	Yes
Accident and Violation Record	At least two years free of causing air accidents due to gross negligence or violations of regulations or procedures, subject to review by the company.	

(1) All instrument approach aid recency required to support the activity must be maintained within regulatory requirements. Instrument Ratings are NOT required for operations designated as VFR only.
(2) Competency-Based Training (CBT) reviewed and endorsed by a Competent Aviation Specialist may be used in lieu of 100 hour requirement.
(3) If not met, a non-revenue check-flight by a qualified check pilot is required.
(4) In extreme latitudes, where night time is limited during summer months, a 'summer alleviation' to this may be agreed by the company's Competent Aviation Specialist.
(5) Use of a simulator of the same type and series being flown may be used if agreed by a Competent Aviation Specialist provided the device has the capability of simulating the approach and landing to an offshore helideck. The specific device must be approved for that use by the responsible regulatory authority.
(6) In countries where the addition of a Type Rating to a Licence is not possible, then it must be demonstrated that the individual has received formal classroom and practical training equivalent to a Type Course.

Appendix 2:

Basic Aircraft Equipment and Configuration

In addition to the considerations of Defence 12.1, helicopters must be fitted with equipment that meets:

1. All certification requirements of FAR-29/CS-29 or FAR-27/CS-27 applicable to the helicopter type for use in offshore operations;
2. All applicable equipment requirements of the main body of this Standard; and
3. All applicable equipment requirements of Appendix 4, for Transport Hoist, Medevac or SAR operations.

For convenience the following table cross-references the aircraft equipment and configurations requirements elsewhere in this standard.

✓ = Required – Unless Short term/Non-hostile/Day /VMC operations are marked N/R. See Remarks also.

× = Restricted from operation

N/R = Not required

N/A = Not applicable

Control	Requirement Title (consult full text)	Short term	Long term	Non-hostile	Hostile	Day/VMC	Night/IIMC	Remarks	Mission
6.6	Passenger Briefing Cards	✓	✓	✓	✓	✓	✓	N/A	All
6.7	Multi-language Placards	✓	✓	✓	✓	✓	✓	N/A	All
7.6 & 9.3	Radar	✓	✓	✓	✓	N/R	✓	N/A	All
7.10	TAWS	✓	✓	✓	✓	N/R	✓	Also over mountains	All
7.11	AVAD	✓	✓	✓	✓	N/R	✓	N/A	All
8.1	PC1 or PC2	✓	✓	✓	✓	✓	✓	N/A	All
8.1	PC3	✓	✓	✓	×	✓	×	N/A	All
8.2	Engine Usage and Trend Monitoring	N/R	✓	✓	✓	✓	✓	PC3/ PC2 with exposure only	All
8.3	Engine/Powerplant Modification Standard	N/R	✓	✓	✓	✓	✓	PC3/PC2 with exposure only	All
8.4	VHM	N/R	✓	✓	✓	✓	✓	Multi-engine	All
10.1	Autopilot or AFCS	✓	✓	✓	✓	N/R	✓	N/A	All
10.4	Icing Certification	✓	✓	✓	✓	N/R	✓	Icing conditions only	All
10.5	FDM Download	N/R	✓	✓	✓	✓	✓	N/A	All
11.3	TCAS2/ACAS2	N/R	✓	✓	✓	✓	✓	HTRE only	All
11.3	TCAS/ACAS	N/R	✓	✓	✓	✓	×	HTRE only	All
11.4	HISL	N/R	✓	✓	✓	✓	✓	HTRE only	All
20.2	Upper Torso Restraint	✓	✓	✓	✓	✓	✓	N/A	All
20.3	PA System	✓	✓	✓	✓	✓	✓	N/A	All
20.4	Aircraft Flotation Systems	✓	✓	✓	✓	✓	✓	N/A	All
20.4	Automatic Float Deployment	N/R	✓	N/R	✓	N/R	✓	N/A	All
20.6	Seating Layout	✓	✓	✓	✓	✓	✓	N/A	All
20.7	Emergency Exit Lighting System	✓	✓	✓	✓	✓	✓	N/A	All
20.8	Push-out Windows	✓	✓	✓	✓	✓	✓	N/A	All
20.9	EBS	✓	✓	N/R	✓	✓	✓	N/A	All
20.10	Life Jackets	✓	✓	✓	✓	✓	✓	N/A	All
20.11	Survival Suits	✓	✓	N/R	✓	✓	✓	N/A	All

Basic Aircraft Equipment and Configuration (cont.)

Control	Requirement Title (consult full text)	Short term	Long term	Non-hostile	Hostile	Day/VMC	Night/IIMC	Remarks	Mission
20.12	Non-hostile Environment Liferafts	✓	✓	✓	×	✓	✓	N/A	All
20.12	Hostile Environment Liferafts	✓	✓	✓	✓	✓	✓	N/A	All
20.14	First Aid Kit and Fire Extinguisher	✓	✓	✓	✓	✓	✓	N/A	All
20.15	Survival Kit	✓	✓	✓	✓	✓	✓	N/A	All
20.16	Satellite Flight Following and Long Range Comms	✓	✓	✓	✓	N/R	✓	N/A	All
20.16 & 17.4	Satellite Flight Following and Long Range Comms	✓	✓	✓	✓	✓	✓	N/A	SAR
20.17	Aircraft ELT	✓	✓	✓	✓	✓	✓	N/A	All
20.17	Aircraft ADELT	N/R	✓	✓	✓	N/R	✓	N/A	All
20.18	Flight Crew PLB	✓	✓	✓	✓	✓	✓	N/A	All
20.19	Passenger PLBs	✓	✓	✓(1)	✓	✓	✓	N/A	All
20.22	Crash protected CVR/ FDR/ULB	✓	✓	✓	✓	✓	✓	Multi-engine	All
20.22	Crash resistant recording	N/R	✓	✓	✓	✓	✓	Single-engine	All
15.1	Auto hover	✓	✓	✓	✓	N/R	✓	N/A	SAR
15.1	FLIR	✓	✓	✓	✓	N/R	✓	N/A	SAR
15.2	Single Hoist	✓	✓	✓	✓	✓	✓	N/A	TH
15.2	Single Hoists	✓	✓	✓	✓	✓	×	N/A	SAR
15.2	Dual Hoists	✓	✓	✓	✓	N/R	✓	N/A	SAR
15.3-15.5	Ancillary Hoist Requirements	✓	✓	✓	✓	✓	✓	N/A	SAR TH
16.1-16.8	Role Equipment	✓	✓	✓	✓	✓	✓	N/A	SAR Med
17.1	Beacon Location/Marine Band Radio/AIS	✓	✓	✓	✓	✓	✓	N/A	SAR
17.2	Marine Band Radio/AIS	✓	✓	✓	✓	✓	✓	N/A	TH
17.3	Crew Comms	✓	✓	✓	✓	✓	✓	N/A	SAR TH Med

(1) If determined during risk assessment based on available SAR response capability.

Appendix 3:

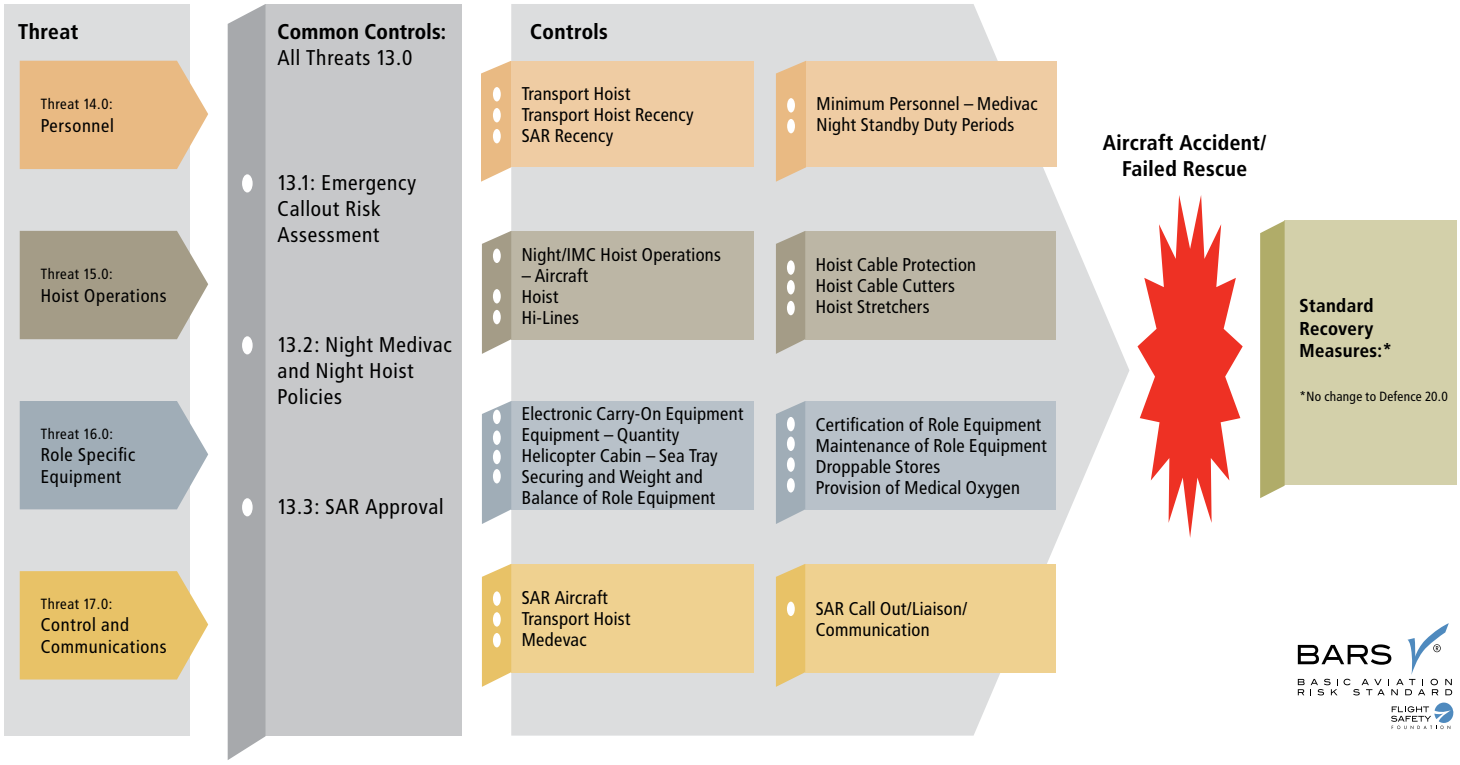
Abbreviations

ACAS	Airborne Collision Avoidance System
ADM	Aeronautical Decision Making
AFCS	Automatic Flight Control System
AGL	Above Ground Level
ALAR	Approach and Landing Accident Reduction
AIS	Automatic Identification System
AOC	Air Operator's Certificate
APU	Auxiliary Power Unit
ARA	Airborne Radar Approach
ATPL	Air Transport Pilot Licence
AVAD	Automatic Voice Alerting Device
AWOS	Automated Weather Observation System
BARS	Basic Aviation Risk Standard
CAA	Civil Aviation Authority
CAP	Civil Aviation Publication (UK)
CBT	Computer Based Training
C of G	(Aircraft) Center of Gravity
CFIT/W	Controlled Flight into Terrain/Water
CPL	Commercial Pilot's Licence
CMT	Critical Maintenance Task
CRM	Crew Resource Management
CS	Certification Standard
CVR	Cockpit Voice Recorder
DG	Dangerous Goods
DSV	Diving Support Vessels
EBS	Emergency Breathing System
ELT	Emergency Locator Transmitter
ERP	Emergency Response Plan
FAR	Federal Aviation Regulation (USA)
FDM	Flight Data Monitoring
FDR	Flight Data Recorder
FLIR	Forward Looking Infra Red
FPSO	Floating Production and Storage Offload
FSF	Flight Safety Foundation
GPS	Global Positioning System
HISL	High Intensity Strobe Light
HLA	Helideck Landing Assistants
HLO	Helideck Landing Officer
HUET	Helicopter Underwater Escape Training
HTRE	High Traffic Risk Environment
IATA	International Air Transport Association
ICAO	International Civil Aviation Organization
ICS	International Chamber of Shipping
IFR	Instrument Flight Rules
IMC	Instrument Meteorological Conditions
LOC	Loss of Control
LOSA	Line Operations Safety Audit
Medevac	Medical Evacuation
MEL	Minimum Equipment List
METS	Modular Egress Training Simulator
MODU	Mobile Drilling Unit
OEI	One Engine Inoperative
OIM	Offshore Installation Manager
OPITO	Offshore Petroleum Industry Training Organization
PA	Public Address
Pax	Passenger
PC	Performance Class
PCN	Pavement Classification Number
PCO	Passenger Control Officer
PED	Personal Electronic Device
PLB	Personal Locator Beacon
PNR	Point of No Return
PPE	Personal Protective Equipment
PRH	Pitch, Roll and Heave
SAR	Search and Rescue
SMS	Safety Management System
SOP	Standard Operating Procedure
TAWS	Terrain Awareness Warning System
TCAS	Traffic Collision Avoidance System
TCDS	Type Certificate Data Sheet
TEM	Threat and Error Management
TSO	Technical Standards Order
ULB	Underwater Locator Beacon
VFR	Visual Flight Rules
VHF	Very High Frequency
VHM	Vibration Health Monitoring
VMC	Visual Meteorological Conditions

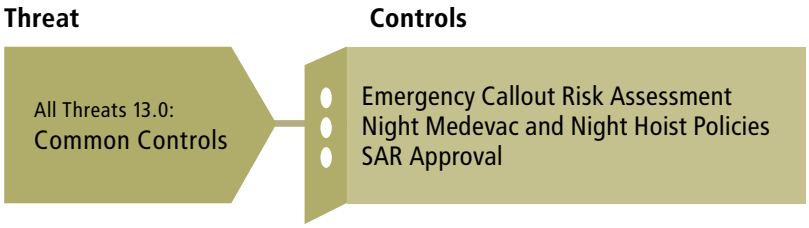
Appendix 4:

Transport Hoist/Medical Evacuation (Medevac)/ Search and Rescue (SAR)

Figure 3: BARS Bow Tie Risk Model – Schematic of Aviation Risk Management Controls and Recovery Measures.



All Threats 13.0: Common Controls



Common Control 13.1: Emergency Callout Risk Assessment

The aircraft operator must have a risk assessment process so that the urgency of Medevac or SAR is separated from the safety-of-flight decision-making process.

Common Control 13.2: Night Medevac and Night Hoist Policies

When required for the operation, the company must consult with the aircraft operator to develop night Medevac and Night Hoist policies.

Medevac flights should only be conducted in life threatening situations and where stabilization until first light is not an option. The final decision to request a medevac must be made by the Offshore Installation Manager (OIM) in consultation with medical staff and the aircraft operator. The final authority on whether a medevac flight can be safely flown rests with the Pilot-In-Command.

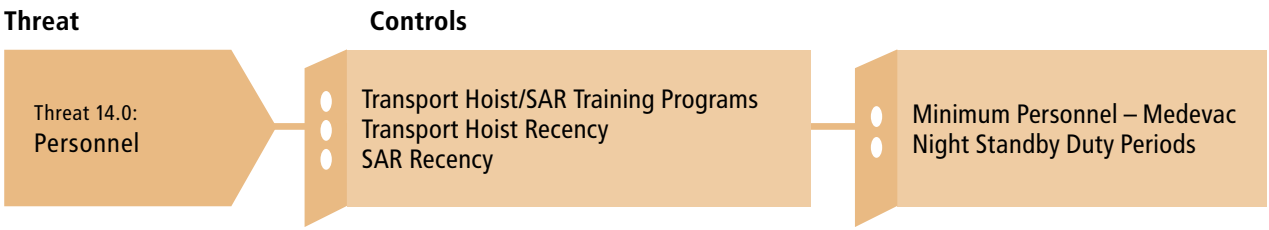
Transport hoist operations should only be conducted at night when scheduling in daylight is not an option.

Common Control 13.3: SAR Approval

The aircraft operator must have any necessary approvals or exemptions necessary from the appropriate responsible regulatory authority in order to conduct both SAR and line/recurrent SAR training.

Threat 14.0: Personnel

Personnel are inadequately trained, rested or assigned to the task and an accident occurs



Control 14.1: Transport Hoist/SAR Approved Training Programs

All personnel assigned to Transport Hoist or SAR operations must have completed an approved training program specific to the task and the assigned role of the individual. For SAR personnel this must include appropriate medical training. Guidance on such training can be found un UK CAA CAP999 Chapter 4.

Control 14.2: Transport Hoist Recency

All Transport Hoist crew members must achieve a minimum of three hoist cycles (including transition to/from the hover) every 90 days or be subject to a hoist check flight with qualified hoist training personnel.

For night Transport Hoist operations all crew members must achieve a minimum of three hoist cycles (including transition to/from the hover) every 90 days or be subject to a night hoist check flight with qualified hoist training personnel.

Control 14.3: SAR Recency

For SAR hoist operations all SAR crew members must achieve a minimum of three hoist cycles to representative vessels (including transition to/from the hover) every 90 days or be subject to a SAR check flight with qualified SAR training personnel.

Where SAR operations are to be conducted at night, all personnel must achieve at least three hoist cycles at night to representative vessels (including transition to/from the hover) in the last 90 days or be subject to a SAR check flight with qualified SAR training personnel.

For SAR hoist operations all SAR crew members must achieve a minimum of three wet hoist cycles (including transition to/from the hover) involving winching persons from the water or liferafts every 90 days or be subject to a SAR check flight with qualified SAR training personnel.

All SAR crew members must achieve at least one offshore search (which may be an exercise) every 90 days or be subject to a SAR check flight with qualified SAR training personnel.

Where SAR operations are to be conducted at night, all SAR crew members must achieve at least one offshore search (which may be an exercise) at night (including the use of FLIR) every 90 days or be subject to a SAR check flight with qualified SAR training personnel.

Where air droppable liferafts or survival kits are to be used, all SAR crew members must achieve at least one deployment (including transition to/from the hover if necessary) every 180 days. If not current for SAR hoist operations three transition to/from the hover over the sea must also be completed every 90 days.

Where air droppable liferafts or survival kits are to be used at night, all SAR crew members must achieve at least one night deployment (including transition to/from the hover if necessary) annually. If not current for night SAR hoist operations three transition to/from the hover over the sea must also be completed at night every 90 days.

Control 14.4: Minimum Personnel – Medevac

Qualified medical professionals meeting all offshore training requirements (HUET) must accompany patients in the cabin during any Medevac. Where there is a risk that the patient may need restraining for their own safety or the safety of others, at least two personnel should be in attendance in the cabin.

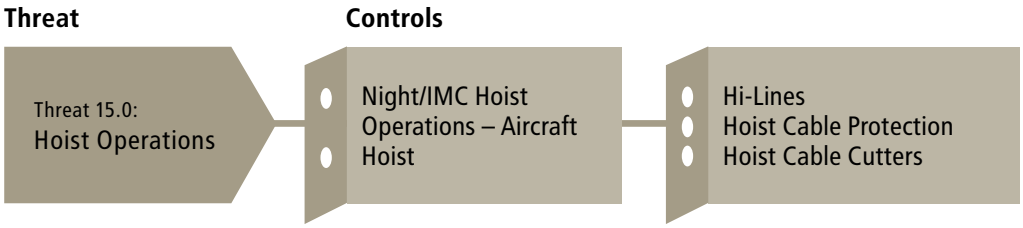
Control 14.5: Night Standby Duty Periods

Flight crew rostered for Medevac or Transport Hoist night duty must remain within approved transport flight crew duty periods (except where Medevac is conducted by SAR crew).

Flight crew rostered for SAR must remain within an approved flight crew duty periods but this may be a SAR specific roster (e.g. with extended duty time due to rest while on stand-by in appropriate accommodation near to the SAR base).
Such accommodation must allow for genuine uninterrupted sleep when not required for a call-out or planned training and must be considered when determining the response time. Such a SAR roster and the associated accommodation must be approved by a Competent Aviation Specialist.

Threat 15.0: Hoist Operations

Inadequately conducted hoist operations result in loss of aircraft and/or personnel



Control 15.1: Night/IMC Hoist Operations – Aircraft

Aircraft assigned to night/IMC Transport Hoist or SAR operations must be equipped with auto-hover capability.

Aircraft assigned to night SAR operations must be equipped with a Forward Looking Infra-Red (FLIR).

Control 15.2: Hoist

All aircraft assigned to Transport Hoist or SAR hoist operations must have at least one hoist.

Aircraft assigned to night/IMC SAR hoist operations must be fitted with two serviceable hoists.

Control 15.3: Hi-Lines

Hi-lines must be available to assist hoist operations.

Control 15.4: Hoist Cable Protection

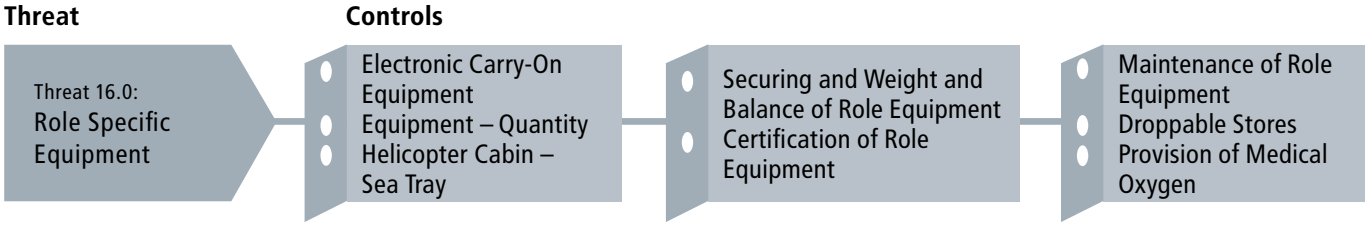
Hoist cables must be protected from contact with aircraft structure.

Control 15.5: Hoist Cable Cutters

Hoist operators must have ready access to manual cable cutters (separate from any cable cutting integrated with the hoist).

Threat 16.0: Role Specific Equipment

Equipment used in support of medical evacuation and/or SAR results in an accident and/or personnel



Control 16.1: Electronic Carry-On Equipment

Electronic carry-on equipment to be used in-flight must be demonstrated to be compatible with aircraft systems and not cause interference. Battery powered equipment that cannot be recharged aboard the aircraft must be shown to have adequate battery life for the intended flight duration.

Control 16.2: Equipment – Quantity

Medical and survival equipment appropriate for an anticipated number of casualties and/or patients must be determined and carried on-board the aircraft. Transport Hoist and SAR personnel must be provided with appropriate protective equipment and harnesses.

Control 16.3: Helicopter Cabin – Sea Tray

Aircraft to engage in wet hoist operations or potential major trauma recoveries must have a cabin floor sea tray to protect the aircraft from the corrosive effects of fluids.

Control 16.4: Securing and Weight and Balance of Role Equipment

The aircraft operator must have a procedure and the means for securing portable role equipment aboard the aircraft. Role equipment must be located so that it does not obstruct emergency exits or push-out windows that occupants need to rely upon based on the cabin configuration.

The aircraft operator must ensure that the weight and balance calculations accurately account for role equipment.

Control 16.5: Certification of Role Equipment

The aircraft operator must have appropriate design and production documentation for all role equipment. The aircraft operator must be able to clearly differentiate between certified aircraft equipment and carry-on items and have procedures that cover both types of equipment.

Control 16.6: Maintenance of Role Equipment

Role equipment that must be certified aircraft equipment must be placed on the aircraft Maintenance Program (or an equivalent equipment program). Carry-on equipment must also have a defined inspection schedule. Maintenance of all role-equipment should be conducted in accordance with manufacturer's instructions.

Control 16.7: Droppable Stores

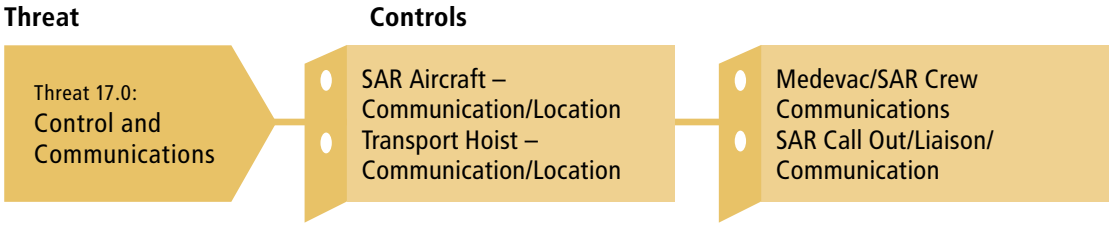
All droppable liferafts and survival packs carried must be certified for that purpose, accompanied by Flight Manual instructions and be demonstrated to drop clear of the aircraft without a risk of damage to the aircraft.

Control 16.8: Provision of Medical Oxygen

The aircraft operator must have a procedure that ensures any oxygen cylinders are filled to manufacturer specifications. Portable oxygen cylinders must undergo regular hydrostatic testing in accordance with manufacturer specifications.

Threat 17.0: Control and Communications

Poor control or communications result in a breakdown of understanding and results in an accident/failed rescue and loss of life



Control 17.1: SAR Aircraft – Communication/Location

SAR aircraft must have:

- The capability to home on 121.5MHz signals;
- The ability to receive 406MHz transmitted position data;
- A marine band VHF radio; and
- A marine Automatic Identification System (AIS) transponder/receiver.

Control 17.2: Transport Hoist – Communication/Location

Aircraft intended to conduct Transport Hoisting must have:

- A marine band VHF radio; and
- A marine AIS transponder/receiver.

Control 17.3: Medevac/SAR Crew Communications

The aircraft operator must have the capability to allow communications between the hoist, medevac and/or SAR personnel and the flight crew. This may include headsets in the cabin and radio communication with winchman.

Control 17.4: SAR Call Out/Liaison/ Communication

The aircraft operator and the company must have agreed procedures for a SAR call out (including the assessment of any third party request for assistance) and agreed response times. Where non-dedicated SAR aircraft are used, the response times must consider a realistic time to re-role the aircraft and also the time to recall the aircraft from any other duties.

The aircraft operator must have procedures to declare aircraft unavailable or declare an extended response time when for any reason they cannot safely conduct a SAR mission to the agreed response time, if called, or to declare a partial capability (e.g. when daytime only SAR can be performed).

There must be appropriate liaison in place with any local Rescue Coordination Center with communication from the SAR base and from the SAR aircraft, both to aid search effectiveness and to ensure all SAR assets are aware of other assets in the area.

Notes

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independent • impartial • international

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