

Basic Aviation Risk Standard

Offshore Helicopter Operations

Safety Performance Requirements



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Purpose

This document is first and foremost a framework that sets safety performance goals necessary to assure safe offshore helicopter operations.

The framework is populated with the requirements and standards that when implemented and effective will achieve these goals.

All users of this document are encouraged to test and challenge each performance requirement and where warranted identify areas for continuous improvement to be shared throughout industry.

The risk-based use of this framework is further intended to encourage alternative means of compliance when supported by robust risk assessment that show the safety outcomes can be met using alternative controls.

The use of the Implementation Guidelines that accompany the Safety Performance Requirements will collate any accepted alternative means of compliance and ultimately provide examples of best practice in achieving the safety goals.

The document will be on a two year revision schedule and will incorporate industry review and feedback during each version update.

The document is presented as a contractable standard to assist in standardizing industry contract Technical Schedules. Specifications that reference this standard are available from the FSF BARS Program Office (BPO).

All national and international regulations pertaining to offshore safety performance requirements must be followed when identified as being more stringent than those controls identified in this document.

Document Structure and Use

This Standard is presented in a concise, risk-based format to emphasize the relationship between major threats to offshore safety performance requirements, 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.

Controls that have wide applicability to multiple threats are shown as 'enablers' 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 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.

Within this document:

- 'Must' indicates a requirement.
- 'Should' indicates a strong obligation (an organization would need a clear justification for alternative approaches, which must provide an equivalent level of safety in their circumstances).
- 'May' indicates discretion is allowable.

Change bars have been utilized to indicate material changes to the content or intent of the Standard.

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.

Variations

Any variation to this Standard is at the discretion of each company in consultation with the aircraft operator. 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, an assessment must be made of when they can be practically introduced.

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

Intelligent Contracting and Oversight

Care should be taken to apply good human factors principles in contracts, contract management and assurance activities to avoid any pressure, or perceived pressure on achieving flight schedules and Key Performance Indicators, making excessive changes of flight schedule/manifest or other distractions that could have unintended safety consequences.

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 must 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 must be assumed to be hostile for all contracts 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 must be considered for all contracts.

Performance Class 1

Operations with performance such that, in the event of a critical engine failure, performance is available to enable the helicopter to safely continue the flight to an appropriate landing area, unless the failure occurs prior to reaching the takeoff decision point (TDP) or after passing the landing decision point (LDP), in which cases the helicopter must be able to land within the rejected takeoff or landing area.

Performance Class 2

Operations with performance such that, in the event of critical engine failure, performance is available to enable the helicopter to safely continue the flight to an appropriate landing area, except when the failure occurs early during the takeoff maneuver or late in the landing maneuver, in which cases a forced landing may be required.

Performance Class 3

Operations with performance such that, in the event of an engine failure at any time during the flight, a forced landing will be required.

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

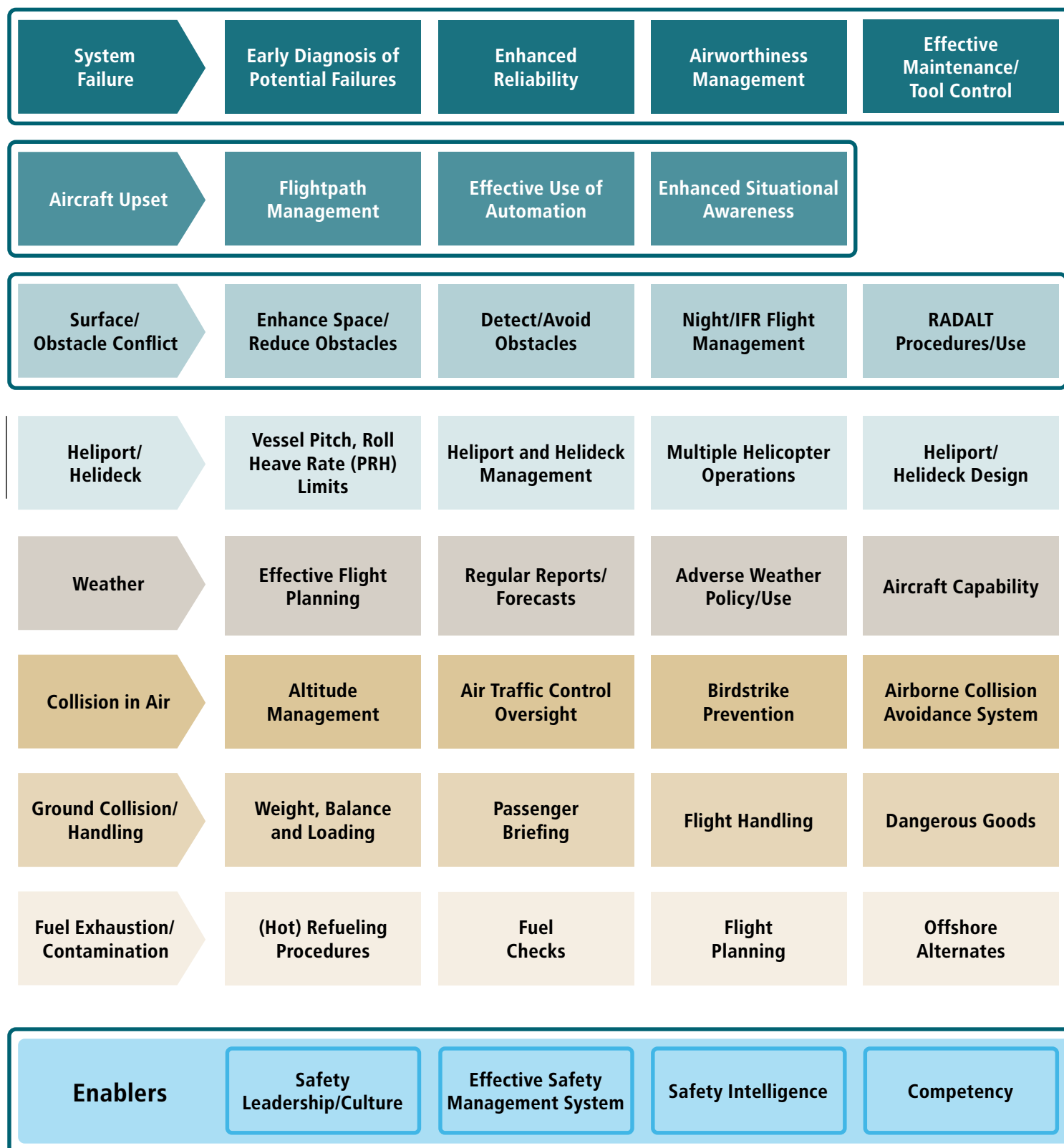
Vessels include Floating Production Storage Offload (FPSO) vessels, Mobile Drilling Unit (MODU) except when jacked-up, Diving Support Vessels (DSV), derrick barges, seismic vessels and other ships.

Additional definitions or abbreviations related to the use of this Standard are listed in Appendix 5.

Figure 1: BARS Bow Tie Risk Model – Schematic of Offshore Safety Performance

Accident Events

Accident Prevention Goals



Version 6, May 2023

Safety Performance Model

Requirements.

Error Tolerant Designs

Supply Chain

High Intensity Strobe Lights

Security and Check-In Control

Fuel Reserves

Fuel Testing/ Inspection

Multi-crew Operations

Personnel Readiness

Modern/Proven Technology

Standards and Oversight

Accident Survival Goals

Impact Survival

Flotation

Underwater Escape

Sea Survival

Land/General Survival

Alerting

SAR/Emergency Response

Post-Accident



HeliOffshore
Safety Through Collaboration



IOGP
International Association of Oil & Gas Producers

1.0: Enablers

Enablers that apply to all accident events outlined in this Standard

Enabler 1.1: Safety Leadership and Culture

Ensuring an organizational culture where the normal behavior at all levels is risk conscious, safe, learning and collaborative behavior.

All organizations must demonstrate an active commitment to safety. They must actively encourage and promote a positive safety culture within their organization through development of safety leadership skills, behaviors and authentic engagement of their entire workforce. They must regularly evaluate their culture as part of their Safety Management System (SMS) using safety culture surveys or analysis of other indicators.

Enabler 1.2: Effective Safety Management System

Ensuring Safety Management Systems are effective at gathering and analyzing safety information, managing risk, providing assurance and ensuring continuous improvement.

SAFETY MANAGEMENT SYSTEM

All organizations must have an effective Safety Management System (SMS) that is integral to the management activity of their organization.

The SMS must identify occurrences, actual and potential safety hazards, assess the associated risks and include consideration of human performance, safety culture and threat and error management and include an audit program. Security threats, both physical and cyber, against personnel, aircraft, passenger terminals and essential infrastructure/systems must also be addressed. The SMS must enable effective workforce participation and appropriately cover activities conducted by safety critical sub-contractors.

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

FLIGHT DATA MONITORING

For long-term contracts the aircraft operator must have a Flight Data Monitoring (FDM) 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.

LINE OPERATIONS SAFETY AUDIT

For long-term contracts the aircraft operator must have a structured Line Operations Safety Audit (LOSA) program as part of its SMS to supplement FDM with cockpit observations. The LOSA data must be analyzed and appropriate action plans implemented.

MAINTENANCE OBSERVATION PROGRAM

For long-term contracts the aircraft operator must have a structured Maintenance Observation Program (MOP) to monitor maintenance practices through observation of maintenance activity. The MOP data must be analyzed and appropriate action plans implemented.

Enabler 1.3: Safety Intelligence

Ensuring a collaborative approach to sharing safety information to directly benefit the entire industry and all stakeholders.

Organizations must actively participate in relevant industry safety bodies and initiatives.

Organizations must share safety occurrences using the locally applicable mandatory and voluntary safety reporting schemes.

The contracted organization 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.

Organizations must examine available external occurrence reports, accident reports and safety promotion material and identify relevant lessons and necessary internal actions.

Enabler 1.4: Competency

Ensuring safety critical personnel are competent to fulfil their duties by having appropriate training, qualifications, knowledge, skill and experience.

FLIGHT CREW COMPETENCY

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

Flight crew on contracts with companies adopting these Safety Performance Requirements must meet Appendix 1 as a minimum standard. 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 Safety Performance Requirements 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).

Flight crew members are to conduct training in suitable Flight Simulation Training Devices (FSTD) every six months.

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.

Aircraft operators must have a defined process to develop competent Line Training Captains (LTCs), Type Rating Instructors (TRIs) and Type Rating Examiners (TREs) and CRM Instructors (CRMIs) or equivalent. Where night operations are conducted there must be specific additional requirements for LTCs, TRIs and TREs.

All crew, including those in single-pilot operations, must have successfully completed Crew Resource Management (CRM) and Threat and Error Management (TEM) training at intervals not exceeding two years. CRM and TEM must be applied in-flight.

CONTINUING AIRWORTHINESS AND MAINTENANCE PERSONNEL COMPETENCY

Continuing airworthiness and maintenance personnel on contracts with companies adopting these Safety Performance Requirements must meet Appendix 1 as a minimum standard.

The aircraft operator and approved maintenance organization must have a program for the training of continuing airworthiness and 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).

There must be a process established for periodic competency assessment at least once every three years.

OTHER PERSONNEL

Organizations must ensure managers and all other safety critical personnel are appropriately trained and competent to perform their duties

Enabler 1.5: Multi-crew Operations

Ensuring flight crew handling and monitoring duties are appropriately divided, defined and conducted in line with human factors principles.

Where multi-crew operations are conducted, procedures outlining the duties and responsibilities of all flight crew members must

be prescribed by the aircraft operator; specifically 'Pilot Flying' and 'Pilot Monitoring' roles and tasks are to be defined. The procedures must consider startle and subtle incapacitation events and mitigating self-imposed pressure.

In multi-crew operations both pre and post flight briefings must be conducted in a standardized way, defined by the aircraft operator. Standardized briefings must also be conducted at defined critical stages of flight.

Enabler 1.6: Personnel Readiness

Ensuring flight crew and maintenance personnel are alert and fit-for-work.

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 or the length of the preceding duty period, whichever is longer.

Regulatory approved Fatigue Risk Management Systems (FRMS) may be used in lieu of the above limits when endorsed by a Competent Aviation Specialist.

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.

Maintenance personnel on rotating assignments that arrive following prolonged or overnight travel or travel exceeding four time zone changes, are not rostered for duties until the minimum ten hours rest period is met.

Enablers 1.0 (cont.)

The routine rostering of overnight maintenance must be reviewed by a Competent Aviation Specialist to agree if necessary to support the company’s operations. The rostering of shifts of over 12 hours or minimum rest periods of less than ten 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.

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 and local legal system and is acceptable to the contracting company.

WELLBEING POLICY

The aircraft operator must have a Wellbeing Policy and associated procedures that encourages personal wellbeing and resilience, while minimizing the risk of physical or mental health conditions developing into a safety concern for the individual or those around them.

aircraft must be operated and controlled in accordance with the AOC of the aircraft operator(s) specified in the contract.

The aircraft operator must have defined management responsibilities, with clarity on who ensures and who assures safety, and an adequately resourced management team.

Aircraft operators must have an Operations Manual with the necessary content, approved (or when applicable, accepted) by the responsible regulatory authority. All other necessary policies and procedures must be documented and, as necessary, approved or accepted by the responsible regulatory authority.

This may be in one or more volumes and include or be supported by appropriate procedures. The Operations Manual must cover normal and emergency operations supported by appropriately structured checklists and be suitable for the operational circumstances and the aircraft types operated.

Human factors principles should be considered when developing procedures (including application of CRM and TEM where appropriate).

Enabler 1.7: Modern/Proven Technology

Ensuring the relative merits of safety features, design standards and service experience are assessed so as to select reliable and resilient aircraft and equipment, suitable for the intended operations.

Aircraft type design, certification standards, safety features, service experience and suitability for use should be assessed prior to use.

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.

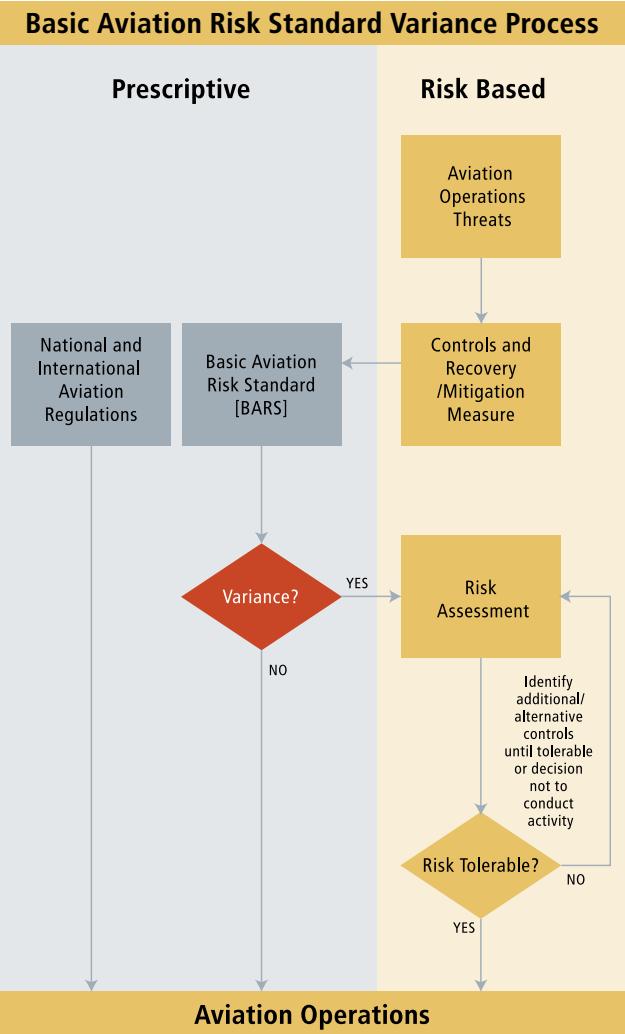
Enabler 1.8: Standards and Oversight

Ensuring operation with all necessary approvals and with an effective system of documented operational procedures.

Aircraft operators must be appropriately licenced, hold an Air Operator’s Certificate (AOC) and approved by the company’s established process and where necessary a Competent Aviation Specialist prior to use.

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

Figure 2: Variance Process



Accident Event 2.0: System Failure

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

Accident Event

System Failure

Accident Prevention Goals

Early Diagnosis of Potential Failures
Enhanced Reliability
Airworthiness Management

Effective Maintenance
Error Tolerant Designs
Supply Chain

2.1: Early Diagnosis of Potential Failures

Ensuring the early detection of impending critical failures to facilitate timely corrective action.

VIBRATION HEALTH MONITORING (VHM)

Multi-engine helicopters 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.

ENGINE USAGE AND TREND MONITORING

All helicopters operated PC3 or PC2 with exposure (see Control 2.2) 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.

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 or smoke from the rear of the cabin). 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, carriage of a crew member or some other suitable means to capture the crew's attention.

2.2: Enhanced Reliability

Ensuring flight operations and continuing airworthiness choices minimize the risk of critical failures and provide assurance of safe outcomes during all engine failure modes.

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, procedures must be based on relevant 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.

ENGINE/POWERPLANT MODIFICATION STANDARD AND MAINTENANCE PROCEDURES

All helicopters operating offshore on a long-term contract to PC3 or PC2 with exposure 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.

2.3: Airworthiness Management

Ensuring aircraft are airworthy and reliable.

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

- (1) The aircraft are maintained in an airworthy condition;
- (2) Operational, safety, emergency and role-related aircraft equipment carried is correctly installed and serviceable or clearly identified as unserviceable (when permitted);
- (3) The certificate of airworthiness (or equivalent) remains valid;

Accident Event 2.0 (cont.)

- (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) Defects are only deferred in accordance with an approved Minimum Equipment List (MEL) and/or procedures approved by the responsible regulatory authority;
- (8) An effective maintenance program is maintained that takes into consideration equipment fit, usage, operating environment and reliability;
- (9) An effective reliability program is in place to monitor if the aircraft maintenance program tasks are effective and their periodicity adequate (see also Controls 2.1 and 2.2);
- (10) An effective process for scheduling of maintenance is in place;
- (11) Accurate and complete definition of the configuration of individual aircraft and aircraft records are maintained (including mass and balance records and Technical Log system);
- (12) Control of maintenance data to be used by maintenance organizations;
- (13) Maintenance Check Flights and Helicopter Offshore Unserviceability Recovery (HOUR) flights are safely conducted, including coordination between flight operations, continuing airworthiness management and maintenance organization personnel;
- (14) Prompt and effective liaison with Type Certificate (TC) Holders; and
- (15) Maintenance standards are defined and adhered to.

2.4: Effective Maintenance

Ensuring maintenance is conducted to the required Maintenance Program and standards.

MAINTENANCE – GENERAL

The aircraft operator must have procedures and resources in place for maintenance of aircraft that ensure:

- (1) The aircraft are maintained in an airworthy condition in accordance with continuing airworthiness instructions;
- (2) Maintenance is conducted in appropriate facilities and environmental conditions by approved and adequately resourced maintenance organizations and authorized personnel;
- (3) Human factors principles are applied to the planning and conduct of maintenance and Stage Work Sheets are used for complex tasks;
- (4) Appropriate supervision of maintenance is in place;
- (5) Appropriate briefings and documented shift handovers occur;
- (6) Occupational safety and health provisions are in place;
- (7) Accurate and complete maintenance records are maintained;
- (8) The risk of Foreign Object Debris (FOD) is controlled;
- (9) Maintenance standards are adhered to; and

- (10) Maintenance organizations must have an internal audit program and SMS, or be within the aircraft operator's audit program and SMS.

CRITICAL MAINTENANCE TASKS (CMTs) AND INDEPENDENT INSPECTIONS

Maintenance tasks that involve the assembly or disturbance of any system that may affect flightpath, 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.

Leak checks must be conducted when maintenance compromises the integrity of fuel, oil or hydraulic systems.

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.

In addition, procedures must be in place for a structured search in the event of lost tools and appropriate management authorization before release of aircraft when tooling remains unaccounted for.

2.5: Error Tolerant Designs

Ensuring design and continuing airworthiness practices minimize the probability and consequences of human error in maintenance.

Preference should be given to aircraft types and modifications that feature a human centered design, i.e. are tolerant of, or minimize the probability/consequence of, human error.

The aircraft operator must have a process to identify design features or maintenance requirements that increase the risk of critical error.

The aircraft operator must have a process to alert the TC Holder or STC Holder of design features, documentation or maintenance requirements that increase the risk of critical error.

The aircraft operator must have a process to mitigate, where practical, design features or maintenance requirements that increase the risk of critical error.

2.6: Supply Chain

Ensuring provision of genuine, serviceable parts.

The aircraft operator must ensure that all parts accepted into stores and fitted to aircraft conform to approved design data, were previously appropriately released by an appropriate organization, are appropriately stored and are in a condition for safe operation.

Accident Event 3.0: Aircraft Upset

Loss of control of the aircraft while in-flight or loss of situational awareness in relation to mobile vessels

Accident Event

Aircraft Upset

Accident Prevention Goals

Flightpath Management
Effective Use of Automation
Enhanced Situational Awareness

3.1: Flightpath Management

Ensuring a safe flightpath with early identification of deviations and timely corrective action.

FLIGHTPATH PROCEDURES

Aircraft operators must define procedures for critical phases of flight operations (inclusive of taxi, takeoff, cruise, approach and landing). This must include applying stabilized approach procedures that consider energy state for all flights.

Aircraft operators must include no-fault, mandatory go-around requirements in the Operations Manual.

NAVIGATION

The destination position must be verified on approach to all vessels and installations.

The location of mobile installations and vessels must be reliably communicated by the company to aircraft operators, and the information be readily available in the flight planning area. Flight crew must confirm the location of mobile installations and vessels (both the destination and any that may be adjacent to the destination) before flight.

3.2: Effective Use of Automation

Ensuring the maintenance of controlled flight with, or without, the use of automation.

An Autopilot or Automatic Flight Control System (AFCS) must be fitted. This must be a four-axis system for multi-engine helicopters unless risk assessed and endorsed by a Competent Aviation Specialist.

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 and ensure the Pilot Flying guards the flight controls when the aircraft is in a coupled autopilot mode, unless engaged in any other essential duties.

3.3: Enhanced Situational Awareness

Ensuring the awareness of external and internal threats.

AIRCRAFT CONTROL ON THE GROUND

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

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 review this risk during all preflight briefings and (if practical) verbalize in pre-landing briefings (unless it can be demonstrated the risk in that area is continuously low).



Courtesy: Bristow

Accident Event 4.0: Surface/Obstacle Conflict

An airworthy helicopter under the control of flight crew is flown into the ground (or water) or an obstacle on or adjacent to the heliport/helideck

Accident Event

Surface/Obstacle Conflict

Accident Prevention Goals

Enhance Space/Reduce Obstacles
Detect/Avoid Obstacles

Night/IFR Flight Mitigations
RADALT Procedures/Use

4.1: Enhance Space/Reduce Obstacles

Ensuring sufficient clearance from obstacles for safe operation.

For operations at night or under IFR to offshore destinations, aircraft operators must have defined Airborne Radar Approach (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 50 feet 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.

4.2: Detect/Avoid Obstacles

Ensuring the detection of adjacent obstacles so when necessary take timely corrective action.

TERRAIN AWARENESS WARNING SYSTEM

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, with offshore specific modes where available.

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.

Flight crew training must include the response to TAWS alerts.

EXTERNAL VISION AND OBSTACLE DETECTION AIDS

To improve situational awareness (of obstacles during takeoff, landing or taxi, personnel/vehicle movements around the aircraft on the ground and the aircraft external condition, such as open panels or damage/leaks/fire), sensors and/or mirrors should be provided to assist the crew on aircraft on long-term contracts.

4.3: Night/IFR Flight Management

Ensuring effective preparation that enables safe operation in Night and IFR conditions.

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).

NIGHT/INSTRUMENT METEOROLOGICAL CONDITIONS (IMC) PROCEDURES

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

NIGHT OR IFR – APPROACH/LANDING REGENCY

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

4.4: RADALT Procedures/Use

Ensuring the provision of reliable RADALT data to provide clear and reliable awareness of height above sea level.

All offshore helicopters must be equipped with at least one radio altimeter (RADALT) with dual displays (including analogue indication), with a visual alert and Automated Voice Alerting Device (AVAD) capability.

The radio altimeter must be serviceable for any flight at night or conducted under IFR (even if 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.



Accident Event 5.0: Heliport and Helideck

Collisions, loss of control on the ground, fires and other accidents related to the design and operation of onshore heliports or helidecks

Accident Event

Heliport and Helideck

Accident Prevention Goals

Vessel Pitch, Roll and Heave Rate (PRH) Limits
Heliport and Helideck Management

Multiple Helicopters Operations
Heliport and Helideck Design

5.1: Vessel Pitch, Roll and Heave Rate (PRH) Limits

Ensuring a safe envelope for vessel movements to enable a safe landing and stability when on the helideck.

The pitch, roll and heave rate 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, wind direction, vessel direction or any circumstance where 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. Aircraft operators must conduct a risk assessment prior to commencing night or IMC operations and supplement these limitations if necessary. These results must be considered as part of a pre-commencement risk assessment (see Enabler 1.2). Helidecks that do not meet the HCA Helideck Monitoring System Standard Revision 9b (or higher) must be subject to more restrictive limitations agreed by both the aircraft operator and a Competent Aviation Specialist.

The flight crew must verify that the reported PRH is within limits before landing.

5.2: Heliport and Helideck Management

Ensuring effective maintenance and operation of helidecks and heliports to enable safe operations.

OPERATIONAL MANAGEMENT AND MAINTENANCE

All heliports and helidecks must have personnel who are responsible for overseeing and managing heliport/helideck operating standards in accordance with documented procedures and as part of a Safety Management System. Personnel designated as being responsible must understand the heliport/helideck procedures, local aviation regulations and certification requirements of the facility.

HELIDECK CONTROL – HELICOPTER LANDING OFFICER (HLO) AND HELIDECK ASSISTANTS (HLA)

All offshore installations must have a HLO and sufficient HDAs 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).

COMMUNICATION

For manned installations and vessels there must be procedures to verify that the helicopter is on approach to the correct destination. There must also be a corresponding ability to communicate visually or verbally if an incorrect approach has been identified.

CLOSED DECKS

If a helideck is closed (for any reason other than simply it is unmanned) it must be clearly marked as such. Markings should include physical deck markings and may be supplemented by status lights.

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.

HELIPORT AND HELIDECK ASSESSMENTS

Aircraft operators must conduct landing site assessments prior to commencing operations to validate suitability of performance and operating limitations. These results must be considered as part of a pre-commencement risk assessment (see Enabler 1.2).

Prior to any night operations to new-build helidecks, or to helidecks with major changes in lighting installations, 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).

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.

5.3: Multiple Helicopter Operations

Ensuring adequate clearance when multiple aircraft operations occur to avoid confliction.

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.

5.4: Heliport and Helideck Design

Ensuring the physical design of helidecks and heliport, their markings, lighting, emergency cover and all ancillary systems are suitable for safe operations.

DESIGN

Use ICAO Annex 14, Volume II ('Heliports') and UK CAA 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.

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

Helidecks to be used at night, (including for medevacs but excluding SAR and MPT), must have green circle and H lights fitted, unless accepted by a risk assessment agreed by both the aircraft operator and a Competent Aviation Specialist.

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.

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. Similar facilities must be available on installations and vessels. Appropriate cleaning must be conducted.

DESIGNATED FREIGHT AREA

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

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.

PERIMETER FENCE

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

Accident Event 6.0: Weather

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

Accident Event

Weather

Accident Prevention Goals

Effective Flight Planning
Regular Reports/Forecasts

Adverse Weather Policy/Use
Aircraft Capability

6.1: Effective Flight Planning

Ensuring aircraft depart with sufficient fuel reserves on routings that take into account the anticipated weather conditions.

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.

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

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.

6.2: Regular Reports/Forecasts

Ensure flight crew receive accurate actual and forecast weather data to make sound planning decisions.

FLIGHT PLAN WEATHER DATA

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

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.

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

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.

6.3: Adverse Weather Policy/Use

Establishing weather limitations consistent with the capabilities of the aircraft and rescue assets are applied to each flight, with provision for appropriate training in anticipated conditions.

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. 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.

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.

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.

6.4: Aircraft Capability

Ensuring the aircraft is capable of operating in the intended weather conditions.

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.

All aircraft contracted to be able to operate under IFR or at night must be fitted with 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.



Courtesy: Bristow

Accident Event 7.0: Collision in the Air

A helicopter and object collide in the air

Accident Event

Collision in the Air

Accident Prevention Goals

Altitude Management
ATC Oversight
Bird Strike Prevention

Airborne Collision Avoidance System (ACAS)
High Intensity Strobe Lights (HISL)

7.1: Altitude Management

Ensuring appropriate clearance from other aircraft and known bird activity.

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 to minimize flight time below 2,500 feet Above Ground Level (AGL) as far as practical or otherwise reduce cruise speed to lower impact energy.

7.2: ATC Oversight

Ensuring the optimum use of ATC services to maximize air traffic separation.

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

7.3: Bird Strike Prevention

Ensuring effective bird control measures are in place to minimize bird strikes.

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.

Aircraft routing must consider bird sanctuaries, known nesting areas and migratory bird paths as far as practical. This should include crossing coastlines perpendicularly to minimize exposure to birds.

Aircraft landing, taxi and strobe lights should be used below 2,500 feet AGL wherever practical.

7.4: Airborne Collision Avoidance System (ACAS)

Ensuring timely detection of conflicting air traffic and avoidance of all traffic.

Aircraft to be flown in a High Traffic Risk Environment (HTRE) at night or under IFR while on long-term contract must be fitted with an ACAS II system that provide both traffic advisories and resolution advisories.

All aircraft to be flown VFR on long-term contract must be fitted with an ACAS I that provides at least traffic advisories.

7.5: High Intensity Strobe Lights (HISL)

Ensuring conspicuity of the aircraft to all other traffic.

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



Courtesy: HeliOffshore

Accident Event 8.0: Ground Collision/Handling

A collision between helicopter and other aircraft, vehicles or persons, or the unsafe loading of an aircraft

Accident Event

Ground Collision/
Handling

Accident Prevention Goals

Weight, balance and Loading
Passenger Briefing
Flight Handling

Dangerous Goods
Security and Check-In Control

8.1: Weight, Balance and Loading

Ensuring the accurate and safe aircraft loading within approved limits.

WEIGHT DETERMINATION AND SAFE LOADING

Aircraft operators must have policies and procedures for the safe loading of the aircraft including the following:

- 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;
- All cargo must be inspected to verify it is accurately declared and not a security or Dangerous Goods concern (Control 8.5 covers baggage);
- 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; and
- Cargo must not obstruct the normal or emergency exits.

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.

8.2: Passenger Briefing

Ensuring passengers have the necessary knowledge to safely board, disembark and evacuate the aircraft.

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), including prohibiting of charging and carriage of e-cigarettes or loose batteries;
- Hearing protection;
- 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: Passengers are to be instructed to adopt an erect (straight back) brace position, with hands gripping their trouser/suit legs or the seat, with knees together and feet slightly forward of the seat edge;
- 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;
- Any other safety and survival equipment a passenger may be reasonably be expected to use;
- 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 and 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

Accident Event 8.0 (cont.)

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.

Briefing Videos and cards must be consistent.

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.

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.

8.3: Flight Handling

Ensuring manifests are accurate, and that passengers are appropriately escorted and seated.

PASSENGER SEATING POSITIONS

Passengers must be seated on the aircraft cognizant of emergency exit/push-out window sizes. Larger passengers, in particular Extra Broad (XBR) passengers whose shoulder width is 55.9cm or greater, 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.

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.

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.

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.

GROUND PROCEDURES

The Operations Manual must include requirements on ground handling and the maneuvering of aircraft including ground taxiing, towing and passenger loading procedures unless alternative procedures are agreed with a Competent Aviation Specialist.

8.4: Dangerous Goods

Ensuring only appropriately packaged and documented DG is carried in the appropriate aircraft hold locations.

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 and other items prohibited from carriage on an offshore helicopter or otherwise subject to limitations. All flight crew must complete Dangerous Goods awareness training at least every two years.

8.5: Security and Check-In Control

Ensuring passengers are qualified and approved to travel, and are free of prohibited items.

PASSENGER SECURITY AND QUALIFICATION CHECKS

The aircraft operator or heliport operator must ensure that an appropriate process is in place to verify the identity of passengers prior to boarding, ensure 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.

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.

Accident Event 9.0: Fuel Exhaustion/Contamination

A helicopter has to conduct a forced landing or ditching after a loss of engine power as a result of fuel exhaustion or contamination, or suffers a fire during hot refueling

Accident Event

Fuel Exhaustion/
Contamination

Accident Prevention Goals

Hot Refueling Procedures
Fuel Checks
Flight Planning

Offshore Alternates
Fuel Reserves
Fuel Storage, Testing and Inspection

9.1: Hot Refueling Procedures

Ensuring hot refueling is completed safely.

Hot refueling (with engines running) 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.

9.2: Fuel Checks

Ensuring the expected fuel quantity is aboard.

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.

9.3: Flight Planning

Ensuring accurate flight plans are prepared.

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.

9.4: Offshore Alternates

Ensuring the use of an offshore alternate is minimized and only when OEI performance and alternative decks are guaranteed.

The use of offshore alternatives must be minimized and the offshore destination must have been approved for OEI landings by a Competent Aviation Specialist and the following criteria are met:

- An offshore destination alternate helideck must only be used after the point of no return (PNR) when an onshore alternate is not available. Prior to the PNR, an onshore alternate aerodrome must be used;
- One engine inoperative (OEI) landing capability must be attainable at the offshore destination alternate helideck;
- To the extent possible, helideck availability must be guaranteed prior to PNR and the dimensions and obstacle clearance must be suitable for its use as an alternate helideck for the helicopter type;
- Weather minima must be established, taking into account the accuracy and reliability of meteorological information; and
- The aircraft operator must have specific procedures for the use of offshore alternates.

This control requires helicopters to be flown to a destination or alternate destination suitable for the conduct of One Engine Inoperative (OEI) landings. In normal operations this requires onshore alternates to be carried at all times.

Accident Event 9.0 (cont.)

9.5: Fuel Reserves

Ensuring aircraft depart with sufficient fuel reserves to avoid fuel exhaustion.

The aircraft operator procedures must require a fuel load that covers start-up, taxi, trip fuel, contingency fuel, alternate fuel and final reserve fuel.

9.6: Fuel Storage, Testing and Inspection

Ensuring the quality of the fuel dispensed to aircraft is acceptable.

FUEL STORAGE

Additional storage requirements:

- Fuel Certificates of Release must 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
- New-build fuel systems must have stainless steel and connection welded plumbing.

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 as 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.

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.

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.

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.

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
- Minimal contact with the ground (using wooden slats or equivalent) and 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.

Usage:

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.



Courtesy: HeliOffshore

Accident Survival 20.0

Mitigating defences in the event of an aircraft accident

20.1: Impact Survival

Ensuring occupants survive a crash impact.

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).

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.

HELMETS

SAR, MPT and Transport Hoist Crew and MPT and Transport Hoist passengers are to wear helmets.

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).

20.2: Flotation

Ensuring the aircraft floats after a ditching or survivable water impact.

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 all multi-engine helicopters.

The aircraft operator must have procedures to arm automatic float deployment systems when making offshore or other over water takeoffs and landings. If permitted in the Flight Manual, the automatic float deployment system must be permanently armed over water.

20.3: Underwater Escape

Ensuring the occupants can escape in the event of a capsize or submersion.

HELICOPTER UNDERWATER ESCAPE TRAINING (HUET)

All crew and passengers must complete a HUET course to a recognized standard 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.

SEATING LAYOUT

Seating must be laid out so that every occupant has access to an emergency egress route through easily accessible emergency exit or suitable opening (such as a push out window) on each side of the helicopter, that is within direct sight from their seated position and has suitable hand-hold options en route. There must be no more than one other occupant between them and an emergency exit or suitable opening.

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.

UNDERWATER EMERGENCY MARKING REQUIREMENT

All the emergency controls that need to be operated underwater must be clearly marked.

PUSH-OUT WINDOWS AND OTHER SUITABLE OPENINGS

Emergency push-out windows must be installed in all locations that are suitable for emergency underwater egress.

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).

EMERGENCY BREATHING SYSTEMS (EBS)

Category A EBS compliant with an appropriate standard must be worn by crew and passengers. Crew and passengers must have received training in Category A EBS use and Category A EBS deployment must be covered in preflight safety briefings.

20.4: Sea Survival

Ensuring the occupants can survive either in a raft or in the water.

LIFE JACKETS

Constant wear, passenger life jackets compliant with an appropriate TSO (e.g. ETSO-2C504), with design features to prevent the life jacket riding up when in the water, must be worn at all times in offshore operations.

SURVIVAL SUITS

Survival suits, compliant with an appropriate standard (e.g. ETSO-2C502/503), 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 8.5), must provide thermal insulation consistent with 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.

LIFERAFTS

Helicopters with a seating capacity of more than nine passengers must be equipped with at least two approved external liferafts. Helicopters with a seating capacity of nine passengers or less must be equipped with at least one approved external liferafts.

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 the requirements of 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.

External liferafts must have a means of activation available in the cockpit and externally (in the event of capsizing). To prevent in-flight deployment there must not be passenger access to the means of activation in-flight.

There must be a retaining line to hold the inflated liferaft near the helicopter to facilitate boarding and a longer retaining line that will ensure the liferaft can remain attached, safely clear of the helicopter. The airframe in the vicinity of the liferaft when deploying and when deployed must be free of projections that could damage the liferaft.

20.5: Land/General Survival

Ensuring the occupants can survive on land or deal with small fires and medical emergencies.

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.

FIRST-AID KIT FIRE EXTINGUISHER AND FIRE CONTAINMENT BAG

At least one first-aid kit and one fire extinguisher must be appropriately installed and accessible in-flight. If any PEDs or an Electronic Flight Bag (EFB) are to be carried in the cockpit or cabin, a Fire Containment Bag, of sufficient size to accommodate the largest item to be carried, must be accessible in-flight.

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.

20.6: Alerting

Ensuring timely alerting and location identification to aid SAR services.

FLIGHT TRACKING AND LONG RANGE COMMUNICATIONS

All aircraft must be fitted with a reliable flight tracking system when operated outside an effective Air Traffic Control (ATC) surveillance service. The position reporting frequency must be appropriate for the operation and at least every two minutes.

The system must be monitored by designated flight following personnel who are able to promptly initiate the ERP. Flight followers must regularly practice ERP activation. There must be a reliable means of direct communication available between the aircraft and flight follower throughout the flight.

In the event the flight tracking system goes unserviceable after departing the main operating base procedures must be in place to communicate by radio and record the aircraft's heading, speed, position at least every 15 minutes.

Accident Survival 20.0 (cont.)

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.

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.

FLIGHT CREW PLB

Flight crew operating helicopters in hostile environments must each have access to a GNSS-capable 406MHz/121.5MHz Personal Locator Beacon (PLB)/Survival ELT meeting an appropriate standard (e.g. ETSO-2C520) and carry any other necessary survival equipment on their person.

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 (e.g. meeting ETSO-2C520), must be carried (normally attached to the life jacket or survival suit).

20.7: SAR/Emergency Response

Ensuring adequate SAR or helideck/heliport emergency services are available in a timely and adequately resourced manner.

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 Controls 4.3, 6.3 and the available SAR capability.

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.

20.8: Post-Accident

Ensuring other actions to mitigate the accident or prevent reoccurrence are in place.

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 flightpath reconstruction.

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.



Courtesy: Aerossurance

Appendices

Personnel Qualifications, Experience and Recency

Pilot-in-Command

Qualifications	FAR-29/CS-29	FAR-27/CS-27 Multi-engine	FAR-27/CS-27 Single-engine
Licence	ATPL(H)	CPL(H)	CPL(H)
Instrument Rating ⁽¹⁾	Command, multi-engine	Command, multi-engine	Not required
Experience⁽²⁾			
If no CBT program is in place or agreed by the company, the following prescriptive requirements are to be met:			
Total Hours	2500	2000	1500
Total Command	1000	1000	1000
Total Command Night Offshore	25	25	25
Total Command Multi-engine	750	500	N/A
Total Command on Type	100	100	100
Pilot Offshore Experience	Two years offshore, one year in a similar offshore environment		

Co-pilot

Qualifications	FAR-29/CS-29	FAR-27/CS-27 Multi-engine	FAR-27/CS-27 Single-engine
Licence	CPL(H)	CPL(H)	CPL(H)
Instrument Rating ⁽¹⁾	Command	Command	
If no CBT program is in place or agreed by the company, the following prescriptive requirements are to be met:			
Experience⁽²⁾			
Total Hours	500	250	250
Total Multi-engine	100	50	
Total on Type	50	10	10

Both Pilot-in-Command and Co-pilot

Recency	
Total Hours previous 60 days ⁽³⁾	15 hours on the contracted type
Night helideck recency – previous 90 days	Three night helideck takeoffs and landings ^{(4) (5)}
CRM/ADM initial and refresher	Annual (in a rolling 12 month period)
Dangerous Goods Awareness	Every two years

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

(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 these requirements.

(3) If not met, a check flight with a qualified check pilot is required which may be a dedicated training flight or a revenue flight. Hours in a Level C or Level D FFS (or type-specific Type III, IV or V devices as described in ICAO Doc 9625 Vol III) may be included in the 50 hour total.

(4) In extreme latitudes, where night time is limited during summer months, a 'summer alleviation' to night recency can be implemented if agreed by the company prior to contract award (or by variation to the contract), provided a suitable process is documented to re-gain recency as the length of night time increases at the end of the defined summer alleviation period.

(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. Use of the simulator cannot be concurrent for 90 day recency requirements, and must alternate with actual offshore recency activity such that no more than two recency requirements of the four per annum are possible using simulator. 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.

Basic Aircraft Equipment and Configuration

In addition to the considerations of Enabler 1.7, 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 6, for Medevac/SAR and Appendix 7 for MPT/Transport Hoist 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

Goal	Requirement Title (consult full text)	Short term	Long term	Non- hostile	Hostile	Day/VMC	Night/ IMC	Remarks	Mission
1.2	FDM Download	N/R	✓	✓	✓	✓	✓	N/A	All
2.1	VHM	✓	✓	✓	✓	✓	✓	Multi-engine	All
2.1	Engine Usage and Trend Monitoring	✓	✓	✓	✓	✓	✓	PC3/PC2 with exposure	All
2.2	PC1 or PC2	✓	✓	✓	✓	✓	✓	N/A	All
2.2	PC3	✓	✓	✓	✓	✓	✕	N/A	All
2.2	Engine/Powerplant Modification Standard	N/R	✓	✓	✓	✓	✓	PC3/PC2 with exposure	All
3.2	Autopilot or AFCS	✓	✓	✓	✓	✓	✓	4-Axis for multi-engine	All
4.1 & 9.3	Radar	✓	✓	✓	✓	N/R	✓	N/A	All
4.2	TAWS	✓	✓	✓	✓	N/R	✓	Also over mountains	All
4.2	External Vision and Obstacle Detection Aids	N/R	✓	✓	✓	✓	✓	N/A	All
4.4	AVAD	✓	✓	✓	✓	N/R	✓	N/A	All
6.4	Icing Certification	✓	✓	✓	✓	N/R	✓	Icing conditions	All
7.4	ACAS II	N/R	✓	✓	✓	✓	✓	HTRE	All
7.4	ACAS	N/R	✓	✓	✓	✓	✕	N/A	All
7.5	HISL	N/R	✓	✓	✓	✓	✓	HTRE	All
8.2	Passenger Briefing Cards	✓	✓	✓	✓	✓	✓	N/A	All
8.2	Multi-language Placards	✓	✓	✓	✓	✓	✓	N/A	All
20.1	Upper Torso Restraint	✓	✓	✓	✓	✓	✓	N/A	All
20.1	Helmets	✓	✓	✓	✓	✓	✓	N/A	SAR MPT TH
20.1	PA System	✓	✓	✓	✓	✓	✓	N/A	All
20.2	Aircraft Flotation Systems	✓	✓	✓	✓	✓	✓	N/A	All
20.2	Automatic Float Deployment	✓	✓	✓	✓	✓	✓	Multi-engine	All
20.3	Seating Layout	✓	✓	✓	✓	✓	✓	N/A	All
20.3	Emergency Exit Lighting System	✓	✓	✓	✓	✓	✓	N/A	All
20.3	Push-out Windows		✓	✓	✓	✓	✓	N/A	All

Basic Aircraft Equipment and Configuration (cont.)

Goal	Requirement Title (consult full text)	Short term	Long term	Non-hostile	Hostile	Day/VMC	Night/IMC	Remarks	Mission
20.3 & 30.1	EBS	✓	✓	✓	✓	✓	✓	N/A	All
20.4	Life Jackets	✓	✓	✓	✓	✓	✓	N/A	All
20.4	Survival Suits	✓	✓	N/R	✓	✓	✓	N/A	All
20.4	Non-hostile Environment Liferafts	✓	✓	✓	✗	✓	✓	N/A	All
20.4	Hostile Environment Liferafts	✓	✓	✓	✓	✓	✓	N/A	All
20.5	First-Aid Kit, Fire Extinguisher and Fire Containment Bag	✓	✓	✓	✓	✓	✓	Fire Containment Bag only if EFBs/PEDS in cockpit or cabin	All
20.5	Survival Kit	✓	✓	✓	✓	✓	✓	N/A	All
20.6	Flight Tracking and Long Range Communications	✓	✓	✓	✓	N/R	✓	N/A	All
20.6	Flight Tracking and Long Range Communications	✓	✓	✓	✓	✓	✓	N/A	SAR
20.6	Aircraft ELT	✓	✓	✓	✓	✓	✓	N/A	All
20.6	Aircraft ADELT	N/R	✓	✓	✓	N/R	✓	N/A	All
20.6	Flight Crew PLB	✓	✓	✓	✓	✓	✓	N/A	All
20.6	Passenger PLBs	✓	✓	✓ ⁽¹⁾	✓	✓	✓	N/A	All
20.8	Crash protected CVR/ FDR/ULB	✓	✓	✓	✓	✓	✓	Multi-engine	All
20.8	Crash resistant recording	N/R	✓	✓	✓	✓	✓	Single-engine	All
12.1	Auto hover/FLIR/NVIS/Lights	✓	✓	✓	✓	N/R	✓	N/A	SAR
12.2	Single Hoists	✓	✓	✓	✓	✓	✗	N/A	SAR
12.2	Dual Hoists	✓	✓	✓	✓	N/R	✓	N/A	SAR
12.3-12.5	Ancillary Hoist Requirements	✓	✓	✓	✓	✓	✓	N/A	SAR TH
13.1-13.8	Role Equipment	✓	✓	✓	✓	✓	✓	N/A	SAR Med
13.9	Bubble Windows	✓	✓	✓	✓	✓	✓	N/A	SAR(2)
14.1	Beacon Location/Marine Band Radio/AIS	✓	✓	✓	✓	✓	✓	N/A	SAR
14.2	Crew Comms	✓	✓	✓	✓	✓	✓	N/A	SAR Med
16.2	Auto hover/Lights	✓	✓	✓	✓	N/R	✓	N/A	MPT TH
18.2	Hoists	✓	✓	✓	✓	✓	✗	N/A	MPT(3) TH
18.3-18.5	Ancillary Hoist Requirements	✓	✓	✓	✓	✓	✓	N/A	MPT(3) TH
18.6	Marine Band Radio/AIS	✓	✓	✓	✓	✓	✓	N/A	MPT TH

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

(2) Dedicated SAR aircraft.

(3) Except when MPT is land on transfer only.

FSF BARSOHO/IOGP 690 Comparison

The bow tie used in BARSOHO Version 1 was presented at the inaugural HeliOffshore Conference (May 2015) and formed the basis for the creation of the HeliOffshore Safety Performance Model (SPM).

BARSOHO Version 3, issued in December 2016, was fully aligned with the SPM, with all controls structure around the elements of the SPM. Version 6 retains alignment with the latest evolution of the SPM.

In October 2020, IOGP issued Report 690 as a recommended practice focused on oil and gas offshore commercial transport operations. Report 690 is neither structured around the SPM nor addresses all SPM elements as BARSOHO does, however in the interest of industry alignment purposes this Appendix maps Report 690 sections to the SPM aligned BARSOHO controls. Where Report 690 does not include aspects to offshore operations, such as SAR, medevac or hoisting, the BARSOHO appendices have not been referenced.

A more detailed comparison can be made available to aircraft operators, BARS Member Organizations and organizations considering contracting to BARSOHO through contact with the BARS Program Office via BARS@flightsafety.org or <https://flightsafety.org/bars/bars-program/>

IOGP 690 Section v1.3	BARSOHO/SPM Control v6
690-1/1 Safety Management System – General	1.2: Effective Safety Management System
690-1/2 Management Commitment and Leadership	1.1: Safety Leadership/Culture
690-1/3 Safety Accountabilities and Responsibilities	1.2: Effective Safety Management System
690-1/4 Key Safety Personnel	1.4: Competency
690-1/5 Emergency Response Planning	20.7: SAR/Emergency Response
690-1/6 SMS Documentation	1.2: Effective Safety Management System
690-1/7 Safety Risk Assessment and Hazard Identification	1.2: Effective Safety Management System
690-1/8 Incident Reporting, Investigation and Learning	1.2: Effective Safety Management System
690-1/9 Safety Performance Monitoring	1.2: Effective Safety Management System 1.3: Safety Intelligence
690-1/10 Management of Change	1.2: Effective Safety Management System
690-1/11 Continuous Improvement – Assurance	1.2: Effective Safety Management System
690-1/12 Training and Education	1.2: Effective Safety Management System 1.4: Competency
690-1/13 Safety Communication	1.2: Effective Safety Management System
690-1/14 Line Operations Safety Audit	1.2: Effective Safety Management System
690-1/15 Environmental Management	1.2: Effective Safety Management System
690-2/1 Air Operator Certificate	1.8: Standards and Oversight
690-2/2 Management of [sic] Personnel	1.8: Standards and Oversight
690-2/3 Insurance	20.8: Post-Accident
690-2/4 Drug and Alcohol Policy	1.6: Personnel Readiness
690-2/5 Automation	3.2: Effective Use of Automation
690-2/6 Terrain Awareness Warning Systems (TAWS)	4.2: Detect/Avoid Obstacles
690-2/7 Airborne Collision Avoidance Systems	7.4: Airborne Collision Avoidance System (ACAS)
690-2/8 Helicopter Flight Data Monitoring	1.2: Effective Safety Management System
690-2/9 Helicopter Performance Class	2.2: Enhanced Reliability
690-2/10 Crew – Personal Protective Equipment	20.4: Sea Survival 20.6: Alerting
690-2/11 Flight Crew – Experience and Qualification	1.4: Competency
690-2/12 Flight Crew Experience – Pilot In Command Under Supervision (PICUS) Flight Time	1.4: Competency
690-2/13 Medical Certification	1.6: Personnel Readiness
690-2/14 Use of Subcontracted Pilots	1.4: Competency
690-2/15 Pilots Flying More Than One Aircraft Type	1.4: Competency
690-2/16 Composition of Flight Crew	1.5: Multi-crew Operations
690-2/17 Flight Crew Fatigue Management – Flight Time Limits	1.6: Personnel Readiness
690-2/18 Flight Crew Fatigue Management – Flight Duty Times and Rest Periods	1.6: Personnel Readiness
690-2/19 Flight Crew Fatigue Management – Rest for Rotating Crews	1.6: Personnel Readiness
690-2/20 Flight Crew Fatigue Management – Night Standby Duty	1.6: Personnel Readiness

FSF BARSOHO/IOGP 690 Comparison (cont.)

IOGP 690 Section	BARSOHO/SPM Control
690-2/21 Aviation Weather – IFR/VFR	6.1: Effective Flight Planning
690-2/22 Aviation Weather – Adverse Weather Policy	6.3: Adverse Weather Policy/Use
690-2/23 Helidecks – Helideck Landing Limits	5.1: Vessel Pitch, Roll and Heave (PRH) Limits
690-2/24 Helidecks – Measurement of Helideck Motion	5.1: Vessel Pitch, Roll and Heave (PRH) Limits
690-2/25 Helidecks – Significant Change in Helideck Conditions	5.1: Vessel Pitch, Roll and Heave (PRH) Limits
690-2/26 Flight Planning	6.1: Effective Flight Planning 9.3: Flight Planning
690-2/27 Fuel Planning	9.3: Flight Planning 9.5: Fuel Reserves
690-2/28 Offshore Alternates – Planning	9.4: Offshore Alternates
690-2/29 Offshore Alternates – Execution	9.4: Offshore Alternates
690-2/30 Flight Procedures – General	1.5: Multi-crew Operations
690-2/31 Flight Procedures – Sterile Cockpit	1.5: Multi-crew Operations
690-2/32 Flight Procedures – Stabilized Approaches	3.1: Flightpath Management
690-2/33 Flight Procedures – Assessment of Wrong Deck Landing Risk	3.3: Enhanced Situational Awareness
690-2/34 Preflight and Post-Flight Procedures	2.3: Airworthiness Management
690-2/35 Flight Following	20.6: Alerting
690-2/36 Perforation Operations	5.2: Heliport and Helideck Management
690-2/37 Birdstrike Avoidance	7.3: Birdstrike Prevention
690-2/38 Cabin Area Cargo	8.1: Weight, Balance and Loading
690-2/39 Flight Crew Training – Records and Programmes	1.4: Competency
690-2/40 Flight Crew Training – Reorientation Flight After Absence	1.4: Competency
690-2/41 Flight Crew Training – Recurrent Training and Maintenance Check Flights	1.4: Competency
690-2/42 Flight Crew Training – 90 Day Recency	1.4: Competency
690-2/43 Use of Flight Simulation Training Devices – General	1.4: Competency
690-2/44 Use of Flight Simulation Training Devices – Devices	1.4: Competency
690-2/45 Pilot Aircraft Conversion Syllabus and Minimum Hours	1.4: Competency
690-2/46 Other Training – Crew Resource Management	1.4: Competency
690-2/47 Other Training – Dangerous Goods Training	1.4: Competency
690-2/48 Role Specific Training – Helicopter Underwater Escape Training (HUET)	1.4: Competency
690-2/49 Role Specific Training – Emergency Breathing Systems (EBS)	1.4: Competency
690-2/50 Role Specific Training – Helideck	1.4: Competency
690-2/51 Role Specific Training – Control Guarding	3.3: Enhanced Situational Awareness
690-3/1 Passenger Check-In	8.5: Security and Check-In Control
690-3/2 Onshore Passenger Holding Areas	5.4: Heliport and Helideck Design
690-3/3 Alcohol and Drugs	8.5: Security and Check-In Control
690-3/4 Passenger and Baggage Weights	8.1: Weight, Balance and Loading
690-3/5 Passenger Handling	8.3: Flight Handling
690-3/6 Passenger – Personal Protective Equipment	8.5: Security and Check-In Control 20.4: Sea Survival 20.6: Alerting
690-3/7 Passenger Briefing	8.2: Passenger Briefing
690-3/8 Cargo – Weighing and Documentation	8.1: Weight, Balance and Loading
690-3/9 Cargo – Dangerous Goods	8.4: Dangerous Goods
690-3/10 Manifests	8.3: Flight Handling
690-3/11 Passenger Training – Helicopter Underwater Escape Training	20.3: Underwater Escape
690-3/12 Passenger Training – Compressed Air Emergency Breathing System	20.3: Underwater Escape
690-3/13 Helideck – Management General	5.2: Heliport and Helideck Management
690-3/14 Helideck – Reporting	6.2: Regular Reports/Forecasts

IOGP 690 Section	BARSOHO/SPM Control
690-3/15 Crane Operations	5.2: Heliport and Helideck Management
690-3/16 Helideck – Staff Training	5.2: Heliport and Helideck Management
690-3/17 Helideck – Passenger Control	8.3: Flight Handling
690-3/18 Rotors Running Refueling	9.1: Hot Refueling Procedures
690-4/1 Basic Principles	2.3: Airworthiness Management
690-4/2 Continuing Airworthiness – Management	2.3: Airworthiness Management
690-4/3 Continuing Airworthiness – Approved Maintenance Programme	2.3: Airworthiness Management
690-4/4 Continuing Airworthiness – Maintenance Data	2.3: Airworthiness Management
690-4/5 Continuing Airworthiness – Minimum Equipment List	2.3: Airworthiness Management
690-4/6 Continuing Airworthiness – Aircraft Maintenance Records	2.3: Airworthiness Management
690-4/7 Continuing Airworthiness – Reliability Programme	2.3: Airworthiness Management 2.5: Error Tolerant Designs
690-4/8 Continuing Airworthiness – Workplace	2.3: Airworthiness Management
690-4/9 Maintenance Management – Aircraft Maintenance Organization Procedures	2.4: Effective Maintenance
690-4/10 Maintenance Management – Maintenance Planning	2.4: Effective Maintenance
690-4/11 Maintenance Management – Maintenance Records	2.4: Effective Maintenance
690-4/12 Maintenance Management – Foreign Object Damage Checks	2.4: Effective Maintenance
690-4/13 Maintenance Management – Independent Inspections	2.4: Effective Maintenance
690-4/14 Maintenance Management – Release to Service	2.4: Effective Maintenance
690-4/15 Maintenance Observation Programme	1.2: Effective Safety Management System
690-4/16 Quality (Compliance Monitoring) System	1.2: Effective Safety Management System
690-4/17 Occurrence Reporting System	1.2: Effective Safety Management System
690-4/18 Maintenance Check Flights	2.3: Airworthiness Management
690-4/19 Maintenance Facilities – General	2.4: Effective Maintenance
690-4/20 Maintenance Facilities – Working Conditions	2.4: Effective Maintenance
690-4/21 Aircraft Components/Material Management – Equipment and Tools	2.4: Effective Maintenance
690-4/22 Aircraft Components/Material Management – Bonded, Quarantine and Inflammables Storage Areas	2.6: Supply Chain
690-4/23 Aircraft Components/Material Management – Responsibilities of Stores Personnel	2.6: Supply Chain
690-4/24 Maintenance – Aircraft Fuel Tank Checks	2.3: Airworthiness Management
690-4/25 Maintenance Personnel General Requirements – Fatigue Prevention	1.6: Personnel Readiness
690-4/26 Maintenance Personnel – Qualifications and Experience	1.4: Competency
690-4/27 Maintenance Personnel – Training	1.4: Competency
690-4/28 Maintenance Personnel – Continuation/Recurrent Training	1.4: Competency
690-4/29 Maintenance Personnel – Competency Assessment	1.4: Competency
690-4/30 Maintenance Personnel – Supervision of Unlicensed and Recently Licensed Maintenance Personnel	2.4: Effective Maintenance
690-4/31 HUMS – Equipment	2.1: Early Diagnosis of Potential Failures
690-4/32 HUMS – Download and Primary Analysis	2.1: Early Diagnosis of Potential Failures
690-4/33 HUMS – Download Periodicity – Normal Monitoring	2.1: Early Diagnosis of Potential Failures
690-4/34 HUMS – Unserviceability	2.1: Early Diagnosis of Potential Failures
690-4/35 HUMS – Support Processes – Training and Data Management	2.1: Early Diagnosis of Potential Failures
690-4/36 HUMS – In-Flight Data Transfer	2.1: Early Diagnosis of Potential Failures
690-5/2 Equipment Serviceability	2.3: Airworthiness Management
690-5/2 Certification Standard	1.7: Modern/Proven Technology
690-5/3 Instrument Flight Rules (IFR) Flights	6.4: Aircraft Capability
690-5/4 Aircraft Automation	3.2: Effective Use of Automation
690-5/5 Aircraft Mounted Emergency Locator Transmitters (ELTs)	20.6: Alerting
690-5/6 Underwater Locator Beacon (ULB) Fitted to Cockpit Voice Recorder (CVR) and Flight Data Recorder (FDR)	20.8: Post-Accident

FSF BARSOHO/IOGP 690 Comparison (cont.)

IOGP 690 Section	BARSOHO/SPM Control
690-5/7 Terrain Awareness Warning System/Helicopter Terrain Awareness Warning System (TAWs/HTAWs)	4.2: Detect/Avoid Obstacles
690-5/8 Airborne Collision Avoidance Systems (ACAS)	7.4: Airborne Collision Avoidance System (ACAS)
690-5/9 Helicopter Flight Data Monitoring (HFDM)	1.2: Effective Safety Management System
690-5/10 Health and Usage Monitoring System (HUMS)	2.1: Early Diagnosis of Potential Failures
690-5/11 Liferrafts	20.4: Sea Survival
690-5/12 Cabin Push-Out Windows (Ditching Emergency Exits)	20.3: Underwater Escape
690-5/13 Emergency Exit Lighting	20.3: Underwater Escape
690-5/14 Seating Layout	20.3: Underwater Escape
690-5/15 Tail Camera	4.2: Detect/Avoid Obstacles
690-5/16 Cockpit Camera	20.8: Post-Accident
690-5/17 Flotation Gear	20.2: Flotation
690-5/18 Flight Following	20.6: Alerting
690-5/19 Passenger Seats and Harnesses	20.1: Impact Survival
690-5/20 Survival Kits	20.5: Land/General Survival
690-5/21 High Intensity Strobe Lights (HISL)	7.5: High Intensity Strobe Lights (HISL)
690-5/22 Enhanced Guidance and Flight Management Systems	4.2: Detect/Avoid Obstacles

BARSOHO/SPM Control	IOGP 690 Section
1.1: Safety Leadership/Culture	690-1/2 Management Commitment and Leadership
1.2: Effective Safety Management System	690-1/1 Safety Management System – General 690-1/3 Safety Accountabilities and Responsibilities 690-1/6 SMS Documentation 690-1/7 Safety Risk Assessment and Hazard Identification 690-1/8 Incident Reporting, Investigation and Learning 690-1/9 Safety Performance Monitoring 690-1/10 Management of Change 690-1/11 Continuous Improvement – Assurance 690-1/12 Training and Education 690-1/13 Safety Communication 690-1/14 Line Operations Safety Audit 690-1/15 Environmental Management 690-2/8 Helicopter Flight Data Monitoring 690-4/15 Maintenance Observation Programme 690-4/16 Quality (Compliance Monitoring) System 690-4/17 Occurrence Reporting System 690-5/9 Helicopter Flight Data Monitoring (HFDM)
1.3: Safety Intelligence	690-1/9 Safety Performance Monitoring
1.4: Competency	90-1/4 Key Safety Personnel 690-1/12 Training and Education 690-2/11 Flight Crew – Experience and Qualification 690-2/12 Flight Crew Experience – Pilot In Command Under Supervision (PICUS) Flight Time 690-2/14 Use of Subcontracted Pilots 690-2/15 Pilots Flying More Than One Aircraft Type 690-2/39 Flight Crew Training – Records and Programmes 690-2/40 Flight Crew Training – Reorientation Flight After Absence 690-2/41 Flight Crew Training – Recurrent Training and Maintenance Check Flights 690-2/42 Flight Crew Training – 90 Day Recency 690-2/43 Use of Flight Simulation Training Devices – General 690-2/44 Use of Flight Simulation Training Devices – Devices 690-2/45 Pilot Aircraft Conversion Syllabus and Minimum Hours

BARSOHO/SPM Control	IOGP 690 Section
1.4: Competency (cont.)	6690-2/46 Other Training – Crew Resource Management 690-2/47 Other Training – Dangerous Goods Training 690-2/48 Role Specific Training – Helicopter Underwater Escape Training (HUET) 690-2/49 Role Specific Training – Emergency Breathing Systems (EBS) 690-2/50 Role Specific Training – Helideck 690-4/26 Maintenance Personnel – Qualifications and Experience 690-4/27 Maintenance Personnel – Training 690-4/28 Maintenance Personnel – Continuation/Recurrent Training 690-4/29 Maintenance Personnel – Competency Assessment
1.5: Multi-crew Operations	690-2/16 Composition of Flight Crew 690-2/30 Flight Procedures – General 690-2/31 Flight Procedures – Sterile Cockpit
1.6: Personnel Readiness	690-2/4 Drug and Alcohol Policy 690-2/13 Medical Certification 690-2/17 Flight Crew Fatigue Management – Flight Time Limits 690-2/18 Flight Crew Fatigue Management – Flight Duty Times and Rest Periods 690-2/19 Flight Crew Fatigue Management – Rest for Rotating Crews 690-2/20 Flight Crew Fatigue Management – Night Standby Duty 690-4/25 Maintenance Personnel General Requirements – Fatigue Prevention
1.7: Modern/Proven Technology	690-5/2 Certification Standard
1.8: Standards and Oversight	690-2/1 Air Operator Certificate 690-2/2 Management of [sic] Personnel
2.1: Early Diagnosis of Potential Failures	690-4/31 HUMS – Equipment 690-4/32 HUMS – Download and Primary Analysis 690-4/33 HUMS – Download Periodicity – Normal Monitoring 690-4/34 HUMS – Unserviceability 690-4/35 HUMS – Support Processes – Training and Data Management 690-4/36 HUMS – In-Flight Data Transfer 690-5/10 Health and Usage Monitoring System (HUMS)
2.2: Enhanced Reliability	690-2/9 Helicopter Performance Class
2.3: Airworthiness Management	690-2/34 Preflight and Post-Flight Procedures 690-4/1 Basic Principles 690-4/2 Continuing Airworthiness – Management 690-4/3 Continuing Airworthiness – Approved Maintenance Programme 690-4/4 Continuing Airworthiness – Maintenance Data 690-4/5 Continuing Airworthiness – Minimum Equipment List 690-4/6 Continuing Airworthiness – Aircraft Maintenance Records 690-4/7 Continuing Airworthiness – Reliability Programme 690-4/8 Continuing Airworthiness – Workplace 690-4/18 Maintenance Check Flights 690-4/24 Maintenance – Aircraft Fuel Tank Checks 690-5/2 Equipment Serviceability
2.4: Effective Maintenance	690-4/9 Maintenance Management – Aircraft Maintenance Organization Procedures 690-4/10 Maintenance Management – Maintenance Planning 690-4/11 Maintenance Management – Maintenance Records 690-4/12 Maintenance Management – Foreign Object Damage Checks 690-4/13 Maintenance Management – Independent Inspections 690-4/14 Maintenance Management – Release to Service 690-4/19 Maintenance Facilities – General 690-4/20 Maintenance Facilities – Working Conditions 690-4/21 Aircraft Components/Material Management – Equipment and Tools 690-4/30 Maintenance Personnel – Supervision of Unlicensed and Recently Licensed Maintenance Personnel
2.5: Error Tolerant Designs	690-4/7 Continuing Airworthiness – Reliability Programme
2.6: Supply Chain	690-4/22 Aircraft Components/Material Management – Bonded, Quarantine and Inflammables Storage Areas 690-4/23 Aircraft Components/Material Management – Responsibilities of Stores Personnel
3.1: Flightpath Management	690-2/32 Flight Procedures – Stabilized Approaches

FSF BARSOHO/IOGP 690 Comparison (cont.)

BARSOHO/SPM Control	IOGP 690 Section
3.2: Effective Use of Automation	690-2/5 Automation 690-5/4 Aircraft Automation
3.3: Enhanced Situational Awareness	690-2/33 Flight Procedures – Assessment of Wrong Deck Landing Risk 690-2/51 Role Specific Training – Control Guarding
4.1: Enhance Space/Reduce Obstacles	None
4.2: Detect/Avoid Obstacles	690-2/7 Terrain Awareness Warning Systems (TAWS) 690-5/6 Terrain Awareness Warning System/Helicopter Terrain Awareness Warning System (TAWS/HTAWS) 690-5/15 Tail Camera 690-5/22 Enhanced Guidance and Flight Management Systems
4.3: Night/IFR Flight Management	None
4.4: RADALT Procedures/Use	None
5.1: Vessel Pitch, Roll and Heave (PRH) Limits	690-2/23 Helidecks – Helideck Landing Limits 690-2/24 Helidecks – Measurement of Helideck Motion 690-2/25 Helidecks – Significant Change in Helideck Conditions
5.2: Heliport and Helideck Management	690-2/36 Perforation Operations 690-3/13 Helideck – Management General 690-3/15 Crane Operations 690-3/16 Helideck – Staff Training
5.3: Multiple Helicopter Operations	None
5.4: Heliport and Helideck Design	690-3/2 Onshore Passenger Holding Areas
6.1: Effective Flight Planning	690-2/21 Aviation Weather – IFR/VFR 690-2/26 Flight Planning
6.2: Regular Reports/Forecasts	690-3/14 Helideck – Reporting
6.3: Adverse Weather Policy/Use	690-2/22 Aviation Weather – Adverse Weather Policy
6.4: Aircraft Capability	690-5/3 Instrument Flight Rules (IFR) Flights
7.1: Altitude Management	None
7.2: ATC Oversight	None
7.3: Birdstrike Prevention	690-2/37 Birdstrike Avoidance
7.4: Airborne Collision Avoidance System (ACAS)	690-2/7 Airborne Collision Avoidance Systems 690-5/8 Airborne Collision Avoidance Systems (ACAS)
7.5: High Intensity Strobe Lights (HISL)	690-5/21 High Intensity Strobe Lights (HISL)
8.1: Weight, Balance and Loading	690-2/38 Cabin Area Cargo 690-3/4 Passenger and Baggage Weights 690-3/8 Cargo – Weighing and Documentation
8.2: Passenger Briefing	690-3/7 Passenger Briefing
8.3: Flight Handling	690-3/5 Passenger Handling 690-3/10 Manifests 690-3/17 Helideck – Passenger Control
8.4: Dangerous Goods	690-3/9 Cargo – Dangerous Goods
8.5: Security and Check-In Control	690-3/1 Passenger Check-In 690-3/3 Alcohol and Drugs 690-3/6 Passenger – Personal Protective Equipment
9.1: Hot Refueling Procedures	690-3/18 Rotors Running Refueling
9.2: Fuel Checks	None
9.3: Flight Planning	690-2/26 Flight Planning
9.4: Offshore Alternates	690-2/28 Offshore Alternates – Planning 690-2/29 Offshore Alternates – Execution
9.5: Fuel Reserves	690-2/27 Fuel Planning
9.6: Fuel Storage, Testing and Inspection	None

BARSOHO/SPM Control	IOGP 690 Section
20.1: Impact Survival	690-5/19 Passenger Seats and Harnesses
20.2: Flotation	690-5/17 Flotation Gear
20.3: Underwater Escape	690-3/11 Passenger Training – Helicopter Underwater Escape Training 690-3/12 Passenger Training – Compressed Air Emergency Breathing System 690-5/12 Cabin Push-Out Windows (Ditching Emergency Exits) 690-5/13 Emergency Exit Lighting 690-5/14 Seating Layout
20.4: Sea Survival	690-2/10 Crew – Personal Protective Equipment 690-3/6 Passenger – Personal Protective Equipment 690-5/11 Liferafts
20.5: Land/General Survival	690-5/20 Survival Kits
20.6: Alerting	690-2/10 Crew - Personal Protective Equipment 690-2/35 Flight Following 690-3/6 Passenger - Personal Protective Equipment 690-5/5 Aircraft Mounted Emergency Locator Transmitters (ELTs) 690-5/18 Flight Following
20.7: SAR/Emergency Response	690-1/5 Emergency Response Planning
20.8: Post-Accident	690-2/3 Insurance 690-5/6 Underwater Locator Beacon (ULB) Fitted to Cockpit Voice Recorder (CVR) and Flight Data Recorder (FDR) 690-5/16 Cockpit Camera



Courtesy: Pegaso

Controls - Competent Aviation Specialist Input

The requirement for contracting companies to have access to Competent Aviation Specialists is essential throughout the life cycle of a contracted aviation operation. This spans the early planning phase, procurement/tender process, operational start-up and extending throughout the production operations phase. Whilst not exhaustive, BARSOHO identifies those controls where specialist input should be sought and are further summarized in this Appendix.

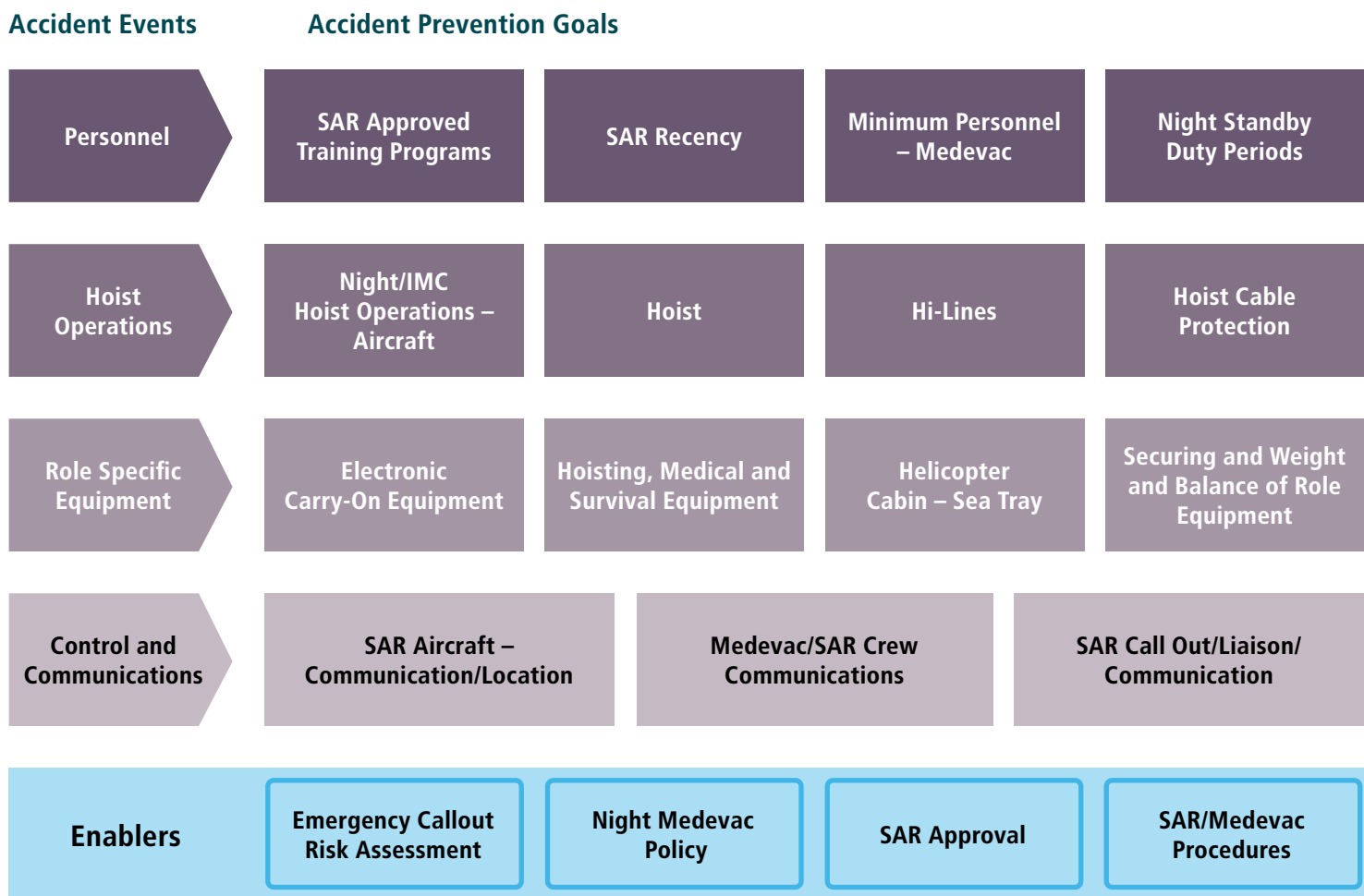
Control	Requirement	Minimum Competent Aviation Specialist Input
1.4	Competency – Flight Crew	Review and endorsement of an operator's Competency Based Training Framework
1.4	Competency – Flight Crew - FSTD	Assessment of any requests for extension to 12 months from 6 months for FFS attendance
1.6	Flight Crew Fatigue Management	Review and endorsement of an operator's regulatory-approved Fatigue Risk Management System (FRMS) where it is less restricted than the default BARSOHO requirements
1.6	Maintenance Personnel Fatigue Management	Review and endorse routine rostering
1.6	Maintenance Personnel Fatigue Management	Review and endorse risk assessment supporting routine rostering of maintenance shifts past 12 hours or minimum rest periods less than ten hours
1.6	Drug and Alcohol Policy	Facilitate company's review and acceptance of operator's Drug and Alcohol Policy
1.7	Modern/Proven Technology	Review and endorse use of any aircraft that differs from contracted fit/configuration
1.7	Modern/Proven Technology	Prior to contract renewal or tender process determine availability and practicality of contracting to latest certification standards
1.7	Modern/Proven Technology	Assess certification basis and in-service experience of aircraft types considered
1.8	Standards and Oversight	Review and endorse use of any alternate aircraft operator used in a sub-charter (cross-hire) arrangement
2.1	Early Diagnosis of Potential Failures	Review aircraft operator's gap analysis against HeliOffshore HUMS Recommended Practice
2.2	Enhanced Reliability – Performance Class	Review and endorse risk assessment supporting use of turbine powered PC3 helicopters offshore
3.1	Flightpath Management	Review aircraft operator's gap analysis against HeliOffshore Flightpath Management Recommended Practice
4.3	Night/IFR Management – Night Passenger Flights	Review aircraft operator's risk assessment for commencement of night passenger flights when new to the operation
4.3	Night or IFR – Approach/Landing Recency	Facilitate company's availability of offshore deck's for night training recency
4.3	Night or IFR – Approach/Landing Recency	Review and endorse 'summer alleviation' to maintaining night recency in extreme latitudes
5.2	Helipoint and Helideck Management	Facilitate company's assurance process overseeing helipoint and helideck operations, including inspections, recurrent training, communications and operational management
5.3	Multiple Helicopter Operations	Review and endorse aircraft operator's risk assessment prior to conducting multiple helicopter helideck operations
5.4	Helipoint and Helideck Design	Review helipoint and helideck design early in the process and well before Critical Design Review completion to ensure appropriate design references and any localized factors are being used
6.1	Special VFR Procedures	Review and endorse use of Special VFR Procedures in support of contracted offshore operations
8.5	Security and Check-In Control	Facilitate agreed and documented process between company and aircraft operator for passenger screening
8.5	Passenger Clothing Policy	Facilitate any policy associated with minimum clothing requirements, such as 'multi-layer' requirements or other
9.4	Offshore Alternates	Review and endorse offshore destinations when use of offshore alternate is used
20.3	Underwater Escape	Review and endorse requests for variance against HUET four year frequency
20.4	Liferafts	Review and endorse risk assessment supporting internal liferafts for role-specific activities with less than four passengers
20.7	Dedicated SAR Support	Participate in risk assessment to determine if dedicated SAR capability is required in a hostile environment
App 1	100 hour requirement	Review and endorse use of CBT in lieu of type specific 100 hour requirement
App1	Night recency	Review and endorse simulator type used to supplement night offshore recency
10.2	Night Medevac Policy	Facilitate company's consultation with aircraft operator on night medevac policy
11.4	Night Standby Duty Periods	Review and endorse SAR roster and accommodation facilities
17.1	Flight Crew Experience	Assessment and endorsement of an operator's Competency Based Training Framework

Abbreviations

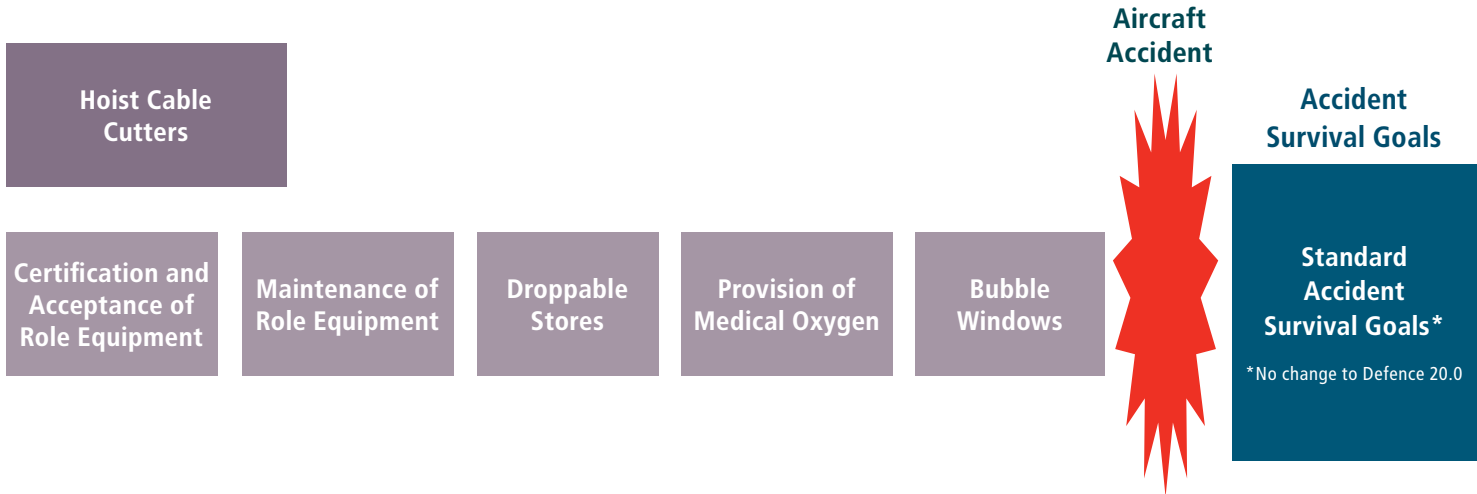
ACAS	Airborne Collision Avoidance System	HSAC	Helicopter Safety Advisory Conference
ADM	Aeronautical Decision Making	HUET	Helicopter Underwater Escape Training
AFCS	Automatic Flight Control System	HTAWS	Helicopter Terrain Avoidance Warning Systems
AFDS	Automatic Float Deployment System	HTRE	High Traffic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

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

Figure 3: BARS Bow Tie Risk Model – Schematic of Offshore Safety Performance



Requirements.



Version 6, May 2023

10.0: Enablers

Accident Event

Enablers

Accident Prevention Goals

Emergency Callout Risk
Night Medevac Policy
SAR Approval

10.1: Emergency Callout Risk Assessment

Ensuring safety of flight is the prime consideration prior to dispatch on medevac or SAR operations.

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.

10.2: Night Medevac Policy

Ensuring all stakeholders consider the increased risk in night operations and the policies supporting this are understood.

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

Night 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.

10.3: SAR Approval

Ensuring relevant regulatory approvals are in place.

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.

10.4: SAR/Medevac Procedures

Ensuring all SAR and medevac operational activities are clearly documented and understood.

The aircraft operator must have comprehensive procedures for SAR and/or Medevac missions.



Courtesy: Aerossurance

Accident Event 11.0: Personnel

Crews are adequately constituted, trained, current and rested

Accident Event

Personnel

Accident Prevention Goals

SAR Approved Training Programs
Transport Hoist Recency

SAR Recency
Minimum Personnel – Medevac
Night Standby Duty Periods

11.1: SAR Approved Training Programs

Ensuring all crew assigned duties are appropriately trained and experienced.

All personnel assigned to SAR operations must have completed an approved training program specific to the task and the assigned role of the individual.

At least one SAR crew member must be qualified as a paramedic/emergency medical technician.

Control 11.2: SAR Recency

Ensuring all crew assigned to SAR operations are within defined recency limitations.

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 SAR crew members must achieve at least three hoist cycles at night (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.

11.3: Minimum Personnel – Medevac

Ensuring the minimum number and qualifications of medical personnel on medevac operations.

Qualified medical professionals meeting all offshore training requirements (as a minimum 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 escorts must be in attendance in the cabin.

11.4: Night Standby Duty Periods

Ensuring the flight crew are suitably rested for the type of operation.

Flight crew rostered for Medevac 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.

Accident Event 12.0: Hoist Operations

Aircraft are appropriately equipped for hoist operations

Accident Event

Hoist Operations

Accident Prevention Goals

Night/IMC Hoist Operations – Aircraft
Hoist

Hi-Lines
Hoist Cable Protection
Hoist Cable Cutters

12.1: Night/IMC Hoist Operations – Aircraft

Ensuring that only suitable equipped aircraft are assigned to night/IMC hoisting operations.

Aircraft assigned to night/IMC 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) and Night Vision Imaging Systems (NVIS) for each crew member and adequate external fixed and steerable flood lights.

Any use of Night Vision Imaging Systems (NVIS) to aid in the conduct of the SAR/Medevac roles must be conducted in accordance with all controls presented in Appendix 5 of the Flight Safety Foundation Basic Aviation Risk Standard (BARS) for contracted aircraft operations.

12.2: Hoist

Ensuring an appropriate hoist redundancy for the intended operation.

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

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

12.3: Hi-Lines

Ensuring the obstacles near the winching area can be avoided.

Hi-Lines must be available to assist hoist operations.

Control 12.4: Hoist Cable Protection

Ensuring the protection of the hoist cable from fouling or snagging the aircraft.

Hoist cables must be protected from damaging contact with aircraft structure.

12.5: Hoist Cable Cutters

Ensuring there is a back up method of disconnecting a fouled cable from the aircraft.

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



Courtesy: Pegaso

Accident Event 13.0: Role Specific Equipment

Aircraft have appropriate role equipment

Accident Event

Role Specific Equipment

Accident Prevention Goals

Electronic Carry-On Equipment
Hoisting, Medical and Survival Equipment
Helicopter Cabin – Sea Tray

Securing and Weight and Balance of Role Equipment
Certification and Acceptance of Role Equipment
Maintenance of Role Equipment
Droppable Stores

13.1: Electronic Carry-On Equipment

Ensuring a safe and reliable electrical power supply for the carry-on equipment that will not interfere with aircraft systems.

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.

13.2: Hoisting, Medical and Survival Equipment

Ensuring the provision of adequate medical and survival equipment.

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

13.3: Helicopter Cabin – Sea Tray

Ensuring there is protection of the aircraft from corrosive fluids during hoisting and SAR operations.

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.

13.4: Securing and Weight and Balance of Role Equipment

Ensuring the role equipment is secured appropriately in the aircraft and accounted for on the weight and balance calculations.

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.

13.5: Certification and Acceptance of Role Equipment

Ensuring the correct classification of role equipment and the certification of the required items before being utilized in operations.

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.

13.6: Maintenance of Role Equipment

Ensuring all role equipment is maintained regularly and to the required standards.

Role equipment that must be certified as 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.

13.7: Droppable Stores

Ensuring all articles that are dropped from the aircraft are fit for purpose and are accompanied by operating procedures to avoid damage to the aircraft.

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.

Accident Event 13.0: Role Specific Equipment (cont.)

Accident Event

Role Specific
Equipment

Accident Prevention Goals

Provision of Medical Oxygen
Bubble Windows

13.8: Provision of Medical Oxygen

Ensuring that medical oxygen and the cylinders carried aboard the aircraft are tested and serviced in accordance with relevant regulations.

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.

13.9: Bubble Windows

Ensuring the aircraft deployed on SAR operations are suitably equipped for observers.

All SAR helicopters must be fitted with at least one bubble window on each side of the cabin to aid visual search.



Courtesy: HeliOffshore

Accident Event 14.0: Control and Communications

Aircraft are equipped with the necessary communications capability and SAR mission coordination is effective

Accident Event

Control and Communications

Accident Prevention Goals

SAR Aircraft – Communication/Location

Medevac/SAR Crew Communications
SAR Call Out/Liaison/Communication

14.1: SAR Aircraft – Communication/Location

Ensuring that suitable SAR communications and search equipment is fitted to the aircraft prior to operations commencing.

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.

14.2: Medevac/SAR Crew Communications

Ensuring that suitable crew communications equipment is fitted to the aircraft prior to operations commencing.

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

14.3: SAR Call Out/Liaison/Communication

Ensuring there are suitable mission coordination, SAR call-out and capability report communications policies and protocols.

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).

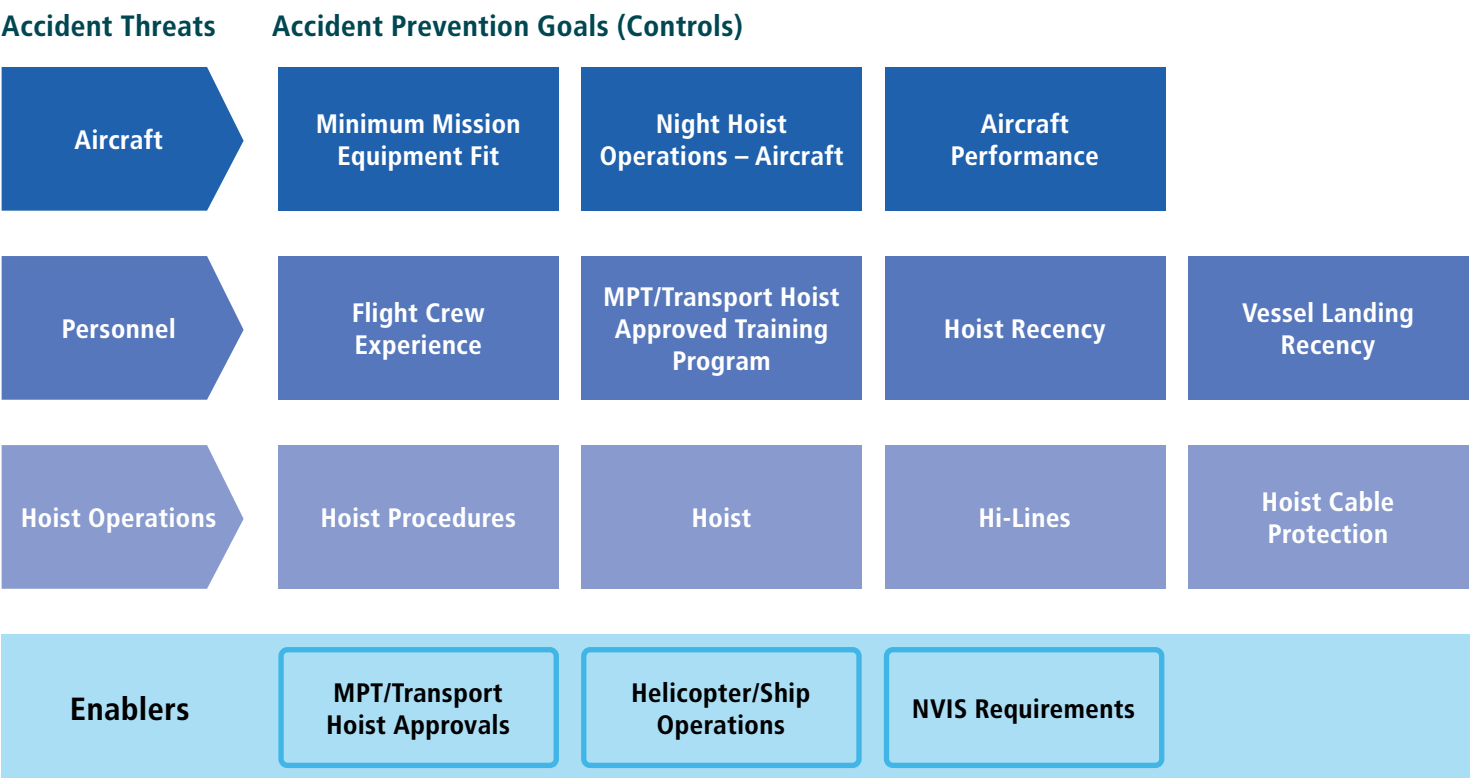
There must be appropriate liaison in place with any local Rescue Coordination Center with communication from the SAR base and from the SAR aircraft, both to aid search effectiveness and to ensure all SAR assets are aware of other assets in the area.

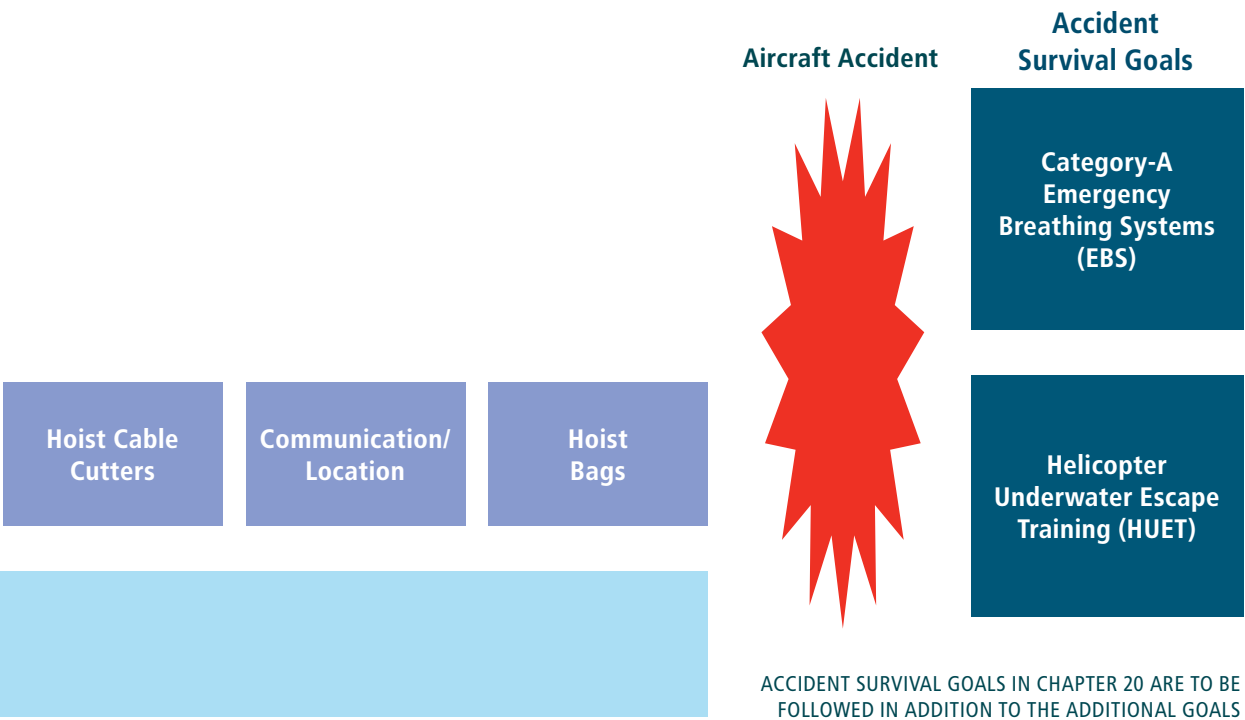


Courtesy: Aerossurance

Helicopter Marine Pilot Transfer (MPT)/Transport Hoist

Figure 4: BARS Bow Tie Risk Model – additional Enablers and Controls to Figure 2.





ACCIDENT SURVIVAL GOALS IN CHAPTER 20 ARE TO BE FOLLOWED IN ADDITION TO THE ADDITIONAL GOALS CONTAINED IN THIS APPENDIX.



Version 6, May 2023

15.0: Enablers

Accident Event

Enablers

Accident Prevention Goals

Marine Pilot Transfer/Transport Hoist Approvals
Helicopter/Ship Operations
Night Vision Imaging Systems (NVIS) Requirements

Enabler 15.1: Marine Pilot Transfer/Transport Hoist Approvals

Ensuring relevant regulatory approvals are in place.

The aircraft operator must have licences, approvals or exemptions necessary from the appropriate responsible regulatory authorities in order to conduct Marine Pilot Transfer and/or Transport Hoist operations.

Enabler 15.2: Helicopter/Ship Operations

Ensuring adequate helicopter landing and hoisting areas in conjunction with effective communications with the ship that enable safe operations.

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

Enabler 15.3: Night Vision Imaging Systems (NVIS) Requirements

Ensuring use of NVIS in the offshore role enhances safe operations of the aircraft and crew.

Any use of Night Vision Imaging Systems (NVIS) to aid in the conduct of the Helicopter Marine Pilot Transfer/Transport Hoist roles must be conducted in accordance with all controls presented in Appendix 5 of the Flight Safety Foundation Basic Aviation Risk Standard (BARS) for contracted aircraft operations.



Accident Event 16.0: Aircraft

Appropriate aircraft, equipment and performance are contracted and utilized for the planned operation

Accident Event

Aircraft

Accident Prevention Goals

Minimum Mission Equipment Fit
Night Hoist Operations – Aircraft
Aircraft Performance

16.1: Minimum Mission Equipment Fit

Ensuring the relative merits of safety features, design standards and service experience are assessed so as to select reliable aircraft with appropriate system redundancy, suitable for the intended operation.

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

16.2: Night Hoist Operations – Aircraft

Ensuring an appropriate Autopilot is installed and operational for night hoisting operations.

Aircraft assigned to night Transport Hoist or Marine Pilot Transfer Hoist operations must be equipped with a serviceable 4-axis Autopilot with auto-hover capability. Aircraft assigned to night MPT and Transport Hoisting operations must be equipped with adequate external fixed and steerable flood lights.

16.3: Aircraft Performance

Ensuring the aircraft can remain airborne in the event of an engine failure to be able to complete hoisting OEI so as not to hazard the hoist passenger.

Aircraft assigned to Transport Hoist or Marine Pilot Transfer Hoist operations must have sufficient One Engine Inoperative (OEI) performance during the hoist activity that guarantees continued hover capability in the event of an engine failure.



Courtesy: Weststar Aviation

Accident Event 17.0: Personnel

Crew are competent, trained and current for hoist operations

Accident Event

Personnel

Accident Prevention Goal

Flight Crew Experience
Marine Pilot Transfer/Transport Hoist Approved Training Program

Hoist Recency
Vessel Landing Recency

17.1: Flight Crew Experience

Ensuring all flight crew have the required experience for the role.

Flight crew must meet the minimum experience requirements outlined in Appendix 1.

90 days or be subject to a hoist check flight with qualified hoist training personnel.

When a marine pilot has documented (logged) more than 100 hoists (30 of which must have been at night if engaged in night operations), the recency requirement of three hoist cycles in 180 days may be used.

For night hoist operations, flight crews and hoist operator must achieve a minimum of three hoist cycles at night (including transition to/from the hover) every 90 days or be subject to a night hoist check flight with qualified hoist training personnel.

17.2: Marine Pilot Transfer/Transport Hoist Approved Training Program

Ensuring all crew and hoist passengers are appropriately trained and competent.

All personnel assigned to Marine Pilot Transfer or Transport Hoist operations must have completed an assessed and documented approved training program specific to the aircraft operator, task and the assigned role of the individual.

17.4: Vessel Landing Recency

Ensuring flight crew retain manipulative proficiency in the day/night operations to and from vessels.

All flight crew assigned to night operations must maintain night recency requirements of five takeoff and landings from a vessel helideck in the preceding 90 days. Furthermore, 20 hours flight time (day or night) in the preceding 90 days must also be attained. Where any aspect is not met, a check flight by a company designated check pilot performed to a satisfactory standard must be conducted.

17.3: Hoist Recency

Ensuring all crew assigned to hoist operations are within defined recency limitations to ensure competency.

If engaged in hoist operations, flight crew, hoist operator and (where applicable) marine pilot must achieve a minimum of three hoist cycles (including transition to/from the hover) every



Courtesy: NHSL

Accident Event 18.0: Hoist Operations

Aircraft are appropriately equipped for hoist operations

Accident Event

Hoist Operations

Accident Prevention Goals

Hoist Procedures
Hoist
Hi-Lines

Hoist Cable Protection
Hoist Cable Cutters

Communication/Location
Hoist Bags

18.1: Hoist Procedures

Ensuring all hoist operational activities are clearly documented and understood.

The aircraft operator must have comprehensive procedures for Marine Pilot Transfer Hoist/Transport Hoist operations.

18.2: Hoist

Ensuring an appropriate and serviceable hoist is used for the intended activity.

The aircraft operator must have a hoist that is maintained in accordance with Original Equipment Manufacturers (OEMs) servicing schedule and complies with all regulatory requirements.

18.3: Hi-Lines

Ensuring the obstacles near the hoisting area can be avoided.

Use of a Hi-Line is to be considered anytime a hoist activity is conducted to a restricted hoist area and/or bridge wing operation.

18.4: Hoist Cable Protection

Ensuring the protection of the hoist cable from fouling or snagging on the aircraft.

Hoist cables must be protected from contact with the aircraft structure.

18.5: Hoist Cable Cutters

Ensuring there is a back-up method of disconnecting a fouled cable from the aircraft.

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

18.6: Communication/Location

Ensuring that suitable communications and locating equipment is fitted to the aircraft prior to operations commencing.

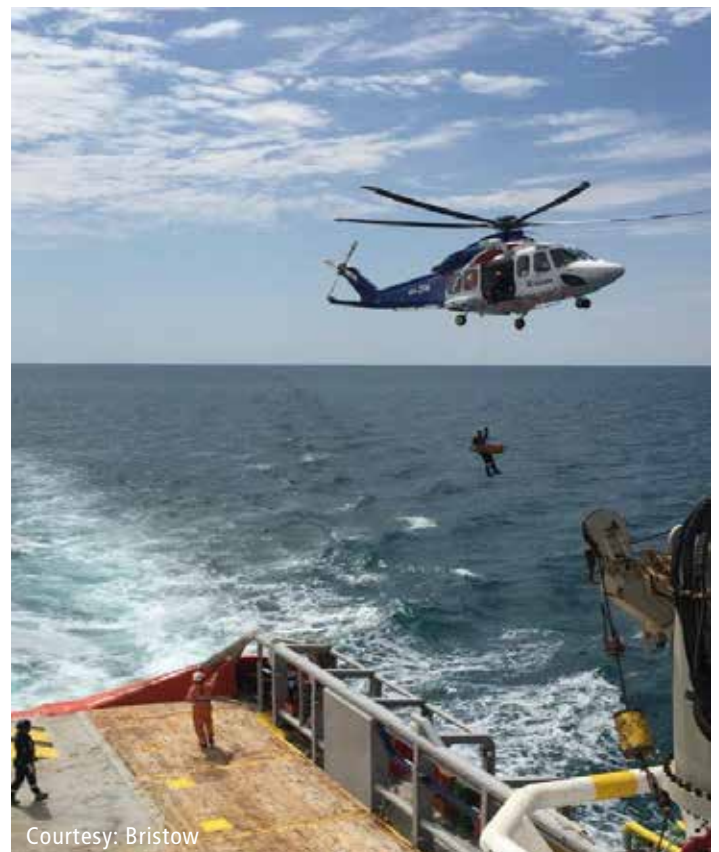
Aircraft intended to conduct Transport Hoist/Marine Pilot Hoist operations must have:

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

18.7: Hoist Bags

Ensure the baggage, tools, equipment, spare parts or other provisions to be hoisted are safely conveyed.

All items to be transferred by hoist with a hoist passenger must be contained in a suitable hoist bag.



Accident Survival 30.0

All accident survival goals outlined in Chapter 20 are to be followed. Marine Pilot Transfer and Transport Hoist operations warrant the following additional mitigating defences

30.1: Category-A Emergency Breathing Systems (EBS)

Ensuring the occupants can escape in the event of a capsize or submersion.

EBS compliant with an appropriate standard must be 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 preflight safety briefings.

30.2: Helicopter Underwater Escape Training (HUET)

Ensuring the occupants can escape in the event of a capsize or submersion.

All flight crew, hoist operator 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.



Courtesy: NHSL



Courtesy: Bristow

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