OGP

Aircraft management guidelines

Report No. 390
July 2008

International Association of Oil & Gas Producers

Publications

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Aircraft management guidelines

Report No: 390
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The *Aircraft management guidelines* were developed by the Aviation Subcommittee.

The following table gives information concerning this edition of the *Aircraft management guidelines*:

Issue	Comments	Date
2	Updates to Sections 4.3, 4.4, 8.1, 8.2 & Appendix 5	July 2008
1	New issue (*minus Appendix 8*)	April 2007

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Section 1 Contents

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1 Introduction

1.1 Purpose

The purpose of these guidelines is to provide a ready reference for the management of aviation. It deals with operations from the conceptual phase onwards. In doing so it addresses the factors to be taken into account when contemplating aircraft operations, the tendering and contractual process, the setting up of support facilities and the expectations required of our contractors.

Most Governments have some form of National (Civil) Aviation Authority, the function of which is to lay down standards and requirements for both the aircraft and the manner in which they are operated. However, Aviation Authorities vary in their effectiveness as well as their requirements and standards, although a good aircraft operator may apply guidelines that are more exacting than legislated requirements. Indeed, even the best Aviation Authority can only lay down minimum requirements; the ultimate responsibility for safety in the air lies with the aircraft operator.

These guidelines and the readily available support from Aviation Advisers should assist those responsible for managing aviation, particularly if they are not aviation specialists, to plan, develop and control, safely and efficiently, air transport operations that are best suited to their needs.

1.2 Document structure

These guidelines are divided into two parts:

- Part 1 contains the current guidelines for aircraft operations.
- Part 2 contains additional guidance and explanatory material describing how the defined guidelines and policies can best be applied.

Part 2 of the document is still under development.

It is emphasised that nothing in this document is intended to contravene national or international regulations.

1.3 OGP guidelines

OGP has developed the set of safety guidelines contained in this manual based on a number of core guidelines and recognised industry best practices. The guidelines are largely based on existing international legislation and safety codes but, where appropriate are further developed as described in this manual. The regulatory basis for these guidelines is summarised in Part 2.

Where these guidelines cannot be achieved fully for practical reasons, an aviation adviser should, wherever practicable, seek mitigating measures with a view to achieving an equivalent level of safety.

For specific operations, these guidelines may need to be augmented with specified additional guidelines to reflect the local circumstances and operating conditions.

1.4 Setting an aviation policy

Companies should consider the establishment of an aviation policy to provide guidelines for the safe, economic and efficient use of aircraft in support of company operations. Such a policy would apply equally to company and contractors' personnel.

As an example, the aviation policy could require that:

- Preference is given to the use of those international airlines and regional carriers with low accident rates. Where any doubt exists, advice should be sought from an aviation adviser.
- Exposure to high-risk operations should be minimised.

- For all aviation activities, other than scheduled airline travel, only aircraft operators and aircraft types approved for use by an aviation adviser should be used.
- Contracted aircraft are to be operated only by aircrew, and maintained by engineers, meeting specified minimum qualifications, and experience and currency requirements.
- Aircraft operators are to meet company insurance requirements.
- Specific operational restrictions may be applied, taking account of the contractor and local environment; amongst these will be the requirement to operate to public transport standards and to meet published aircraft performance criteria.
- The decision to use aircraft should be weighed against the alternatives of using other forms of travel, taking full account of operational, economic and, above all, safety implications.

Section 2 Contents

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2 Aviation operation review requirements

2.1 Contracted air operators

Any aircraft operator invited to tender should be reviewed and accepted in accordance with the relevant procedures of the OGP member company. Subsequently, all such operators should be reviewed on a regular basis, at a frequency determined by risk, exposure, usage and performance of the air operation on the previous review, and should not be used without a current acceptance.

- All ongoing/long-term operations (those exceeding one year in length) should be subject to initial and thereafter annuals reviews.
- Start-up operations or those with a high level of activity may require more frequent oversight.

2.2 One-time acceptances

Operators used for ad-hoc charter flights are also subject to an on-site review. Should this not be practical, an exceptional "one time acceptance" based solely on documentation provided by the operator may be given subject to certain criteria being met and accepted by the OGP member company. It must be recognised that such a one-time acceptance provides less assurance about the safety of the operation and the contractor's suitability for the proposed task. Aircraft operators receiving a "one time acceptance" should not be used subsequently until they are subjected to a full review as explained above.

2.3 Principles of review

The purpose of an OGP Member Company review of an aircraft operator is to determine the suitability as an aircraft operator in terms of safety and capability and, where appropriate, to make recommendations for improvements. The OGP member company interfaces such as owned/maintained assets (airfields, passenger services, flight following, helidecks, refuelling equipment, scheduling arrangements, *etc.*), should also be reviewed.

Reviews must be carried out in accordance with defined terms of reference. The standards applied will be those established by the OGP member company, except where the requirements of the National Aviation Regulations of the air operator concerned are more restrictive or otherwise exceed the standards specified by the OGP member company. A review report will be delivered to the customer, typically by the end user within the OGP member company, within an agreed period after the review debrief.

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Section 3 Contents

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3 Safety management

3.1 Introduction

To assist OGP Members and their business partners in maintaining continuously high levels of improvement in safety management, many OGP Members have required, as a matter of policy, that all their business units and their aviation operators should have Safety Management Systems (SMS) and safety cases/expositions in place.

3.1.1 Aircraft operators safety management system guidelines

Some OGP Members may require the following of aircraft operators:

- Reduce the risks of flying for its company/contractor personnel to that as low as reasonably practicable.
- Achieve standards of aviation safety in air transport services contracted to OGP Members that are targeted to levels comparable to those of major transport category aeroplanes and helicopters operators.
- Aircraft operators having standing contracts[1] with the OGP Member, to produce a Health, Safety & Environment Case (HSE-Case)[2, 3] or Safety Exposition, acceptable to the OGP Member.
- Setting targets for improvement and to measure, appraise and report safety performance.

3.1.2 Aviation safety cases

The objective of an aircraft operator's Aviation Safety Case is to provide assurance that the contractor has a safe operation, that it has identified and assessed the major hazards and safety risks in its operations, and that it can manage them to levels that are as low as reasonably practicable. This includes having systems in place to prevent escalation and to minimise injury/damage in the event an incident does occur or a hazard is reported.

The following applies:

- An operation specific Aviation Safety Case may be required for all operations of a duration of one year or more and for all operations of less than one year's duration involving more than 50 flying hours per month or involving particularly hazardous operations (including all offshore operations). An example of the Safety Cases requirements used by some OGP Members for these and other contract types is given at Appendix 2.
- All contractors tendering for a new contract, which requires an Aviation Safety Case (in accordance with the preceding bullet point above), may be allowed to submit a Provisional Safety Case in support of their tender proposal.
- A provisional Safety Case should demonstrate that the contractor has conducted a preliminary hazard assessment of its proposed operation, taking fully into account the particular local circumstances and operating environment, and identifying the necessary controls.
- The successful tenderer will be expected to produce a full Aviation Safety Case acceptable to the OGP Member within 3 months of the commencement of operations and to demonstrate that the necessary controls have been put into place.

3.1.3 Risk assessment & risk reduction opportunities

The ability to assess risks and identify opportunities to reduce risk is fundamental in achieving improved safety performance. These elements are cornerstones of the Safety Case process. The challenge for most operations is how to assess the risk reduction opportunities in terms of effectiveness and cost benefit in attaining risk levels that are as low as reasonably practicable (ALARP). It is important to be able to rank the risk reduction opportunities to help ensure that the best possible

1 *This would include call off or dedicated contracts but not one-off/ad-hoc purchase orders*

2 *The term 'safety' is a generic term which covers occupational health, safety & environmental management considerations as well as aviation safety (airworthiness, flight and ground safety) and aviation security*

3 *For air transport operators it is recommended that the Safety Case be produced in three parts: the Aviation Safety and Security Case, the Occupational Health and Safety Case and the Environmental Case. A single document covering all aspects of safety in an integrated manner may be acceptable as an alternative.*

safety outcome is being achieved. Appendix 1 contains guidelines for a structured process to assess and rank risk reduction opportunities.

3.2 Incident & accident reporting

3.2.1 Reporting

The definition of an Accident, Incident & Serious Incident are contained in International Civil Aviation Organisation (ICAO) Standards & Recommended Practices, Aircraft Accident and Incident Investigation – Annex 13 to the Convention on International Civil Aviation.

Notwithstanding the air operator's regulatory, local and/or national legislative Mandatory Occurrence Reporting obligations, all OGP Members should, by contract, require that contracted air operators provide reports to the OGP Member's Aviation Adviser and the local OGP Member's business unit contract manager in the event of the following occurrences:

- Aircraft Accident; or
- Serious Incident; or
- Near Miss.

Aircraft accidents and serious incidents will normally be notified, investigated and reported in accordance with the international standards and recommended practices contained in ICAO Annex 13 which provides the necessary framework for the Investigation. OGP Members may observe and participate if allowed by the Governing State of Occurrence.

Specialist assistance provided through the OGP Member's Aviation Adviser may be provided to the local in-house accident investigation team following initial notification.

The OGP's *Health & safety incident reporting system users' guide* should also be consulted to determine if injuries sustained in the course of OGP Members' aviation related activities are reportable to the OGP.

3.2.2 Injuries

Fatality & Serious Injury

ICAO Annex 13 contains the accepted definitions for the classification of fatalities and serious injuries arising from aircraft accidents. The following additional definitions for minor and slight injury may be useful.

Minor Injury

A minor injury is an injury sustained by a person in an accident or incident and which:

- Requires hospitalisation for less than 48 hours; or
- Results in painful injury or strain; or
- Results in simple fracture of finger, toes or nose; or
- Results in minor burns.

Slight Injury

Any other injury not described above which requires first aid, bandaging or reduced mobility for a short period.

3.3 Drugs & alcohol policy (pilots & maintenance personnel)

Contractors should have formally documented policies on the use/abuse of alcohol, medical drugs and narcotics. Guidance should be provided on what the company considers to be acceptable by way of alcohol consumption. Additionally, guidance should be given to staff on which commonly available medical drugs, prescribed or otherwise, may impair an individual's ability to perform in the cockpit or workplace. In all cases the operator must comply with any national legislation/guidelines.

3.4 Quality assurance

A key element of an effective SMS is the existence and application of a suitable Quality Assurance (QA) System that includes an internal audit programme that is managed at the local operational level, and is subject to periodic management review. An air operator's Quality Assurance system should cover both the operations and maintenance organisations.

The key elements of such a system should include the appointment of a Quality Manager, procedures for the operation of the system, an audit plan, record of audit findings, evidence of follow-up and close-out of findings, and a review process.

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Section 4 Contents

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4 Aircraft operations general

4.1 Contractual

4.1.1 Contract management – Aviation Advisor support

In the early stages of planning a new venture where air transport is being considered, the involvement of an Aviation Advisor has proved invaluable in determining the optimal solution for aviation transport requirements. In such cases, Aviation Advisor representation on the scouting team provides the necessary expertise to evaluate influencing factors such as terrain, distances, climate, SAR facilities, and make timely recommendations including advice on design criteria for remote airfields or for helipads or helidecks. In remote and developing areas, a considerable lead time (typically a minimum of six months) may be required to ensure availability of suitable aircraft operated by an approved contractor.

For longer-term contracts and contract renewal, advice should also be sought from the Aviation Advisor on the detailed contract terms to ensure that individual OGP Member's standards are included in the contract.

Where the air support requirements on a contract are particularly complex or extensive in their scope, consideration should be given to appointing a professionally qualified aviation supervisor for the specific operation.

All OGP Member's using aircraft should have a nominated Air Operations Supervisor (AOS) focal point, responsible for overseeing aviation activities in accordance with the advice laid down in this manual. Advice is available at all times from the nominated Aviation Advisor, and this advice is supplemented by the "Guidance to Air Operations Supervisors" booklet issued by the OGP.

4.1.2 The role of the Air Operations Supervisor (AOS) focal point

Those responsible for the supervision of air transport within OGP Member's business units typically range from Heads of Aircraft Services, who may be qualified pilots or professional aircraft maintenance engineers to others, with no previous knowledge of aviation. Other variations include EP ventures, where the Operations Manager, Logistics Manager, or a member of their staff, looks after air transport support, often in conjunction with other responsibilities.

The scope of work varies enormously: from simply chartering aircraft to meet specific tasks, with passenger handling undertaken by the aircraft operator or an agent; to operating an owned fleet of aircraft, with company owned facilities including airfields, helipads, helidecks, passenger scheduling and handling. The running of facilities will require the setting up of in-house procedures, establishing competencies training personnel, provisioning equipment and putting in place a safety management system.

Air Operations Supervisor (AOS) will be used as the generic term for the purpose of this publication be they an 'Aviation Co-ordinator, 'focal point', or other localised or OGP Member specific term (Terms of Reference at Appendix 3).

The training needs of an AOS should be tailored to the experience level and qualifications of the person selected to be an AOS taking into consideration the scope of the work required to be undertaken. Examples of courses available are at Appendix 4.

4.1.3 Aircraft insurance & indemnity

Level of Insurance

The OGP Member should determine the level of insurance required in line with its company risk management guidelines.

Evidence of insurance

OGP Members should require that:

a) Each aircraft operator provide documentary evidence of the required insurance coverage.

b) Such insurance not be cancelled or changed materially during the course of the contract without at least thirty days written notice to the OGP Member.

Subrogation, cross liability & additional insured

a) To the extent necessary to reflect indemnities given by an aircraft operator under the contract, insurers should waive rights of action/subrogation against the OGP Member and the OGP Member should be named as an additional insured under the policy.

b) Liability insurance should contain a severability clause (Cross Liabilities).

Additional cost

The OGP Member's Risk Management and or Insurance specialists/advisors should be consulted if there will be a cost associated with the requirement to name the OGP Member as additional insured or to obtain a waiver of subrogation.

4.1.4 Use of third-party (turnkey) contracts

The following points are stressed should an OGP Member choose to use turnkey contractors:

a) OGP Member's personnel on company business who in the course of their work are expected to use aircraft owned by other companies or chartered by third parties/other companies should exercise caution and should consult with the OGP Member's Aviation Advisory staff before using the aircraft.

b) Third-party aircraft should meet standards of safety / technical quality comparable to those of the OGP Member; they should provide an adequate level of liability coverage (see previous comments above) and the crew/staff should meet OGP Member equivalent competence standards.

c) While emergency situations may not allow sufficient notice for advance evaluation, employees should liaise with their OGP Member's Aviation Advisor, either directly or through locally designated contacts, whenever possible.

d) Included are aircraft operating to OGP Member contracted facilities and provided through third-parties as a "turn key" contract operation for other services such as seismic, barge, geophysical survey, cargo, mobile offshore drilling units (MODUs), *etc*.

e) Reviews of the aviation contractor by the Aviation Advisor should still be required, whether or not a turnkey contract is in place.

f) Supervision of the aviation services should be maintained and the aviation contractor's performance continuously monitored.

g) The Aviation Advisor's review of the contractor would also specifically cover the local OGP Member's business unit's ability to monitor and maintain standards.

4.2 Operating categories & usage

4.2.1 Use of scheduled airlines & airline safety

OGP Members should endeavour to provide information that allows its business travellers to select and use those airlines representing the lowest risk for the route to be flown.

The OGP has developed an *Airline safety assessment mechanism* (OGP report 311) which can be used by OGP Members to compare the relative risks of travelling on scheduled airlines and decide whether the risks associated with airline travel are compatible with the business need. The Mechanism takes into account a significant number of factors that contribute to the relative risk of an airline.

4.2.2 Use of non-scheduled Aircraft

When travel by non-scheduled aeroplane or helicopter is deemed appropriate, this may be on dedicated contract aircraft, by spot charter or on aircraft of joint venture partners. In these cases, advice

should be sought from the Aviation Advisor regarding the status, with respect to the OGP Member's policies and requirements, of the aircraft operator and aircraft type, and the qualifications of the pilots to be used.

Paragraph 2.2 of this manual provides further details in respect of 'One Time Acceptance' and subsequent review requirements.

4.2.3 Use of private or non-accepted aircraft

During the course of conducting company business, personnel are sometimes offered 'lifts' in private aircraft or in aircraft operated by non-reviewed or non-accepted companies, often at very short notice. Providing time permits, the Aviation Advisor may be able to offer advice in respect of non-reviewed companies. OGP Members should consider using a 'One Time Acceptance process' (paragraph 2.2.) as a guide to the operator's ability and to assist management in the risk assessment of such flights.

4.2.4 Use of public sector aircraft

In the course of conducting its activities the OGP Member may be offered the use of public sector aircraft, for example those operated by law enforcement or other government agencies. The aircraft offered may be military types or civil aircraft that may not otherwise conform with civil airworthiness requirements. It is also possible that these aircraft are operated outside of the civil aviation regulations. There may be situations or locations where the use of a public sector aircraft by an OGP Member is warranted in which case advice from the Aviation Advisor should be sought to determine how to assess whether use of these aircraft can accepted or should be declined.

4.2.5 The use of unapproved aircraft for emergency & med-rescue flights

The option of auditing all the possible med-rescue aircraft operators around the world (e.g. SOS, AXA or similar companies) that are available to respond to an air ambulance flight is likely to beyond the resources available to most OGP Members. However, where there is a dedicated aircraft operator that is approved and suitably equipped, then that operator should be used for the task, such as in the case where an injured person is evacuated from an offshore platform, for which the OGP Member has a contracted support helicopter.

A good source for standards for Air Ambulance operations are summarised in the Transport Canada "Guide to Air Ambulance Operations (TP10839E) available on website: http://www.tc.gc.ca/CivilAviation/commerce/manuals/tp10839/menu.htm.

At the time of requiring a Med-rescue flight, the OGP Member often cannot pick and choose whose aircraft will be called to respond and therefore is forced to accept the service as provided. The only alternate would be to use local medical facilities, or wait for commercial airline flights; neither of these options may be practicable or acceptable for real medical emergencies in remote locations where the medical support is less than the desirable standard.

Therefore the following process should apply:

a) Controls should be in place to ensure that the OGP Member management and medical Advisors only call for Med-rescue flights when the level of illness/injury warrants the evacuation of the patient. These controls should form one part of the Emergency Response Plans for the operation or site.

b) Wherever possible, contracts should be in place with Med-rescue service companies such as those with known international reputations.

c) The use of aircraft, as supplied, is accepted on the basis that the exposure and risk of using unaudited/unapproved aircraft is outweighed by the risk of further suffering or loss of life to the patient who is the focus of the medical emergency.

4.3 Pilots

4.3.1 Qualifications & experience levels

The tables at Appendix 5A detail the recommended flying experience and qualifications of pilots before they can fly OGP Member or Contractor(s) personnel. Where these requirements cannot be met a mechanism to obtain a dispensation providing mitigating factors should be set in place. Where this is requested, full details of an individual's experience and qualifications under the headings shown in the tables should be submitted to the Aviation Advisor for assessment and consideration prior to agreeing or otherwise such a dispensation.

Some operators have a basic pilot training scheme involving carefully structured modules from selection through to basic, ab-initio training, conversion training, supervised line training, and captaincy. For the graduates of such a scheme, dispensation may be given for acceptance as captains or co-pilots on OGP Member flights, in accordance with paragraph 4.3.2 below for multi-crew aircraft.

Some civil aviation authorities allow "captaincy under supervision", or "P1 U/S" as it is sometimes called, to count towards captaincy time, usually counting as half captaincy time. Before such an arrangement can be agreed during the progression of a co-pilot towards captaincy on an OGP Member contract, guidance should be sought from the Aviation Advisor to ensure the validity of that flying. See paragraph 8.1.6.

In some countries air taxi and helicopter pilots may not be entitled to an Air Transport Pilot's Licence (ATPL) or equivalent. If this is the case then a Commercial Pilot's Licence (CPL), or equivalent in the country of operation, is considered acceptable.

4.3.2 Alternatives to OGP recommended experience levels

As an alternative to the pilot experience levels detailed at Appendix 5A, it is possible to replace the requirement for defined pilot experience levels with an approved operator's competency based Training Management System.

In order for this to be achieved the following conditions must be met:

a) Establishment of a formal modular competency based progression scheme for pilots from basic (ab-initio/new-hire/conversion) to command and for aircraft type conversion, which will:
   i) Be based on the guidelines at Appendix 5B and 5C as applicable.
   ii) Include elements for role specific training (i.e. offshore, vertical reference, etc) at the Stage 2 level of Appendix B for Commercial Pilot License (CPL) training.

b) An "In depth" audit of the operator's training system and effectiveness of the implementation of the competency based training program should be conducted by the Aviation Advisor to include as a minimum the following:
   i) Content of the training syllabus, to include comprehensive ground and flight training, particularly for entry at the CPL stage (see paragraph e. below), based on the best practices from both the JAA and FAA training schemes.
   ii) Formal progression scheme for pilots from basic (ab-initio) to command. Observation of Crew Resource Management (CRM) and simulator programs including Line Oriented Flight Training (LOFT).
   iii) Examination of training records with emphasis on a structured command course, competencies to be achieved and the associated checking process.
   iv) Base and Line training staff with defined competencies who themselves are regularly checked.

c) An ongoing Aviation Advisor audit plan to ensure continued compliance with the above.

d) Additionally, when a new aircraft type is introduced on contract, it may be necessary to reduce total time on type. This must be considered only after approval of the contractor's

type conversion scheme based on the requirements of Appendix 5C, and will be reviewed on a case-by-case basis as noted above and in paragraph 8.1.2.3.

e) The entry level for the competency based Training Management System will normally be at the ab-initio level (Appendix 5B, Stage 1), but can also be with a CPL (Appendix 5B, Stage 4) providing the following conditions are met:
   i) Aptitude testing is completed in accordance with Appendix 5B, Stage 1.
   ii) Full training records are held for the CPL training including records of stage and final check flights and total hours are validated by the training provider.
   iii) The training provider has been assessed and approved by the Helicopter Operator's QA or Training organisation and the following factors taken into account:
      - Instructor experience and oversight.
      - Instructor competency check process.
      - The content of the CPL training (ground and flight), which should include an element of role specific training dependant on the type of flying to be performed (i.e. Offshore, vertical reference).

4.3.3 Use of freelance pilots

Freelance pilots may be used provided they have received proper company Induction/Conversion/line training before initial engagement, are included as part of the company's recurrent training programme, and have OPC/LPC (or equivalent) conversion training in accordance with national regulations. If time between engagements exceeds time between required OPCs, a training programme applicable to all company pilots, being away from flying for whatever reason, should apply to the freelancer.

Their competence and suitability should be formally endorsed by the senior management of the company and must meet all OGP Member flying qualifications and experience level requirements. They are also to be identified to and accepted by the OGP Member Company prior to use.

4.3.4 Pilots flying more than one aircraft type

Aircraft operator policy regarding how many types of aircraft their pilots may fly varies significantly from company to company. The advisability of pilots flying more than one type will vary with the types involved, the experience level and ability of the individual pilot. Nevertheless, because flying several types on a day-to-day basis inevitably increases the danger of incorrect responses in the case of emergency, and the likelihood of handling errors or errors of omission, a limit must be placed on the practice.

It is expected that aircraft operators have a written policy on the subject, which applies across their operations. While pilots are quite correctly endorsed on a number of aircraft types, it is recommended that only in exceptional circumstances would more than 2 types be flown on a day-to-day basis, with a preference to see a single type flown, or scheduling in blocks of days on a particular type. If more than one type is flown, recency flying and type training must be closely monitored both by individual pilots and by a nominated member of the flying, training or operations staff.

4.3.5 Medicals

All pilots should hold a valid medical certificate; appropriate to their age and licence (e.g. CPL, ATPL) requirements. The frequency of medical examinations is determined by the local National Aviation Authority and/or company policy, however the maximum interval between medical examinations should not exceed 12 months.

4.3.6 Payroll/salary

Aircrew personnel should not receive remuneration solely on a basis of hours or miles flown. The method of remuneration preferred by the OGP is fixed salary.

4.4 Maintenance personnel

4.4.1 Qualifications

Personnel carrying out aircraft maintenance should hold appropriate Licences and Endorsements (see Appendix 5D1-3). These should permit them to carry out aircraft maintenance or act in a supervisory or management capacity of an approved Maintenance organization as required by the governing regulatory authority of the jurisdiction in which operations are being conducted.

In addition, a system of local approvals should exist whereby the operator or maintenance organisation systematically approves the individual to exercise the privileges granted by the licence &/or endorsements held on the range of equipment operated or maintained by that organisation. Such approvals may be granted following formal type training and/or local on-the-job training/evaluation as appropriate.

4.4.2 Experience levels

Except in the case of incumbent supervisory/management personnel already employed in an organization introducing a new aircraft type, where additional manufacturer or other qualified support may be required during the introductory and early operational phases, the experience level requirements at Appendix 5D1-3 should be applied.

4.4.2.1 Unlicenced and recently licensed maintenance personnel

Where organisations employ a mix of licenced and unlicenced or recently licenced personnel, the proportion of personnel having Certificate of Release to Service (CRS) privileges to others should be sufficiently high to ensure adequate supervision of work is provided at all times.

4.4.2.2 Trainee aircraft maintenance engineer/technician/mechanic

Where trainees are sponsored or employed directly, the requirements for unlicensed and recently licenced maintenance personnel equally applies. In addition, there will be a documented training plan that includes:

a) Formal training – must hold basic educational qualifications for entry into regulator approved maintenance training course(s) in respect of the licence categories desired. Training must be provided by an approved training organisation.
b) On-the-job training – must be relevant and provide adequately supervised experience.

4.4.3 Avoidance of fatigue in maintenance personnel

Other than any specific labor laws that may be applicable locally, maintenance personnel are not

regulated by duty hour limitations. The following should be applied to all engineering staff as a minimum standard:

4.4.3.1 Total work period

Total work periods should not exceed 12 hours in any 24-hour period. Where, exceptionally, it is essential that the working period is extended; the Head of Maintenance should approve it on a case-by-case basis.

4.4.3.2 Night Shifts

Where shifts are regularly rostered with a heavy maintenance workload to be completed through the night, the length of the duty period may be reduced from the 12 hour maximum.

Ideally, if night maintenance is necessary, the bulk of work should be completed by the shifts on duty up to midnight with the residue completed by a swing shift covering the period from approximately 2300 to 0700 hrs.

4.4.3.3 Rest

Each full working shift should be followed by a minimum 8-hour rest period. When working a 24-hour split shift on line operations, at least 6 hours rest should be provided excluding travel. The entitlement for days off should be a minimum of 7 per month of which at least 4 should be in a minimum of 2-day periods. When the location or climate is arduous then this should be increased to minimize fatigue.

4.4.3.4 Remote camps

On locations such as seismic camps, where it is not feasible to provide other than the bare accommodation necessities, a regular "time on site, time off site" routine should be set up to ensure that maintenance personnel working under these conditions do not stay in the field for prolonged periods. The minimum recommended ratio of time on site to time off site is considered to be 2:1 with a maximum period on site not to exceed 2 months.

4.5 Maintenance requirements

4.5.1 Quality assurance & quality control

Quality Assurance requirements are given at paragraph 3.4. Quality Control procedures are normally a regulatory requirement, and should adopt a form similar to those expressed in JAR Ops 1/ JAR 145. However, where there is an absence of regulatory control in this respect, the requirements expressed in paragraphs 4.5.2 and 4.5.3 should be satisfied by all operators/maintenance organisations on contract to the OGP Member.

4.5.2 Requirement for duplicate inspections/Required Inspection Items (RII)

After any disturbance or dis-assembly of a control system or vital point in an aircraft, most but not all Regulators call for independent inspections to be made and certified by two appropriately qualified persons, before the next flight. The inspections are to include correct assembly, locking, and free and correct movement of control systems over the full range. Such requirements extend to electrically activated "fly-by-wire" systems and their connections as well as to mechanical linkages.

This procedure is known as duplicate inspection/required inspection item and, although not all authorities have a similar requirement, it is recommended that Companies require such inspections. Therefore, whenever a contract is drawn up this requirement should be included.

Independent Duplicate/Required Inspection Item (RII) inspections are to be carried out by appropriately qualified technicians, the required qualifications normally being determined by the Regulator, e.g. FAA Inspection Authorisation (IA). In the event that the qualification of these persons is not regulated, then they would normally be a licensed engineer, technician or equivalent, holding a type approval for maintaining the engines and airframe of the aircraft concerned.

In all cases, the operator or maintenance organisation is to ensure that sufficient persons appropriately qualified are available at all main operating &/or maintenance bases. When away from the normal maintenance facilities, and only minor adjustment of a control is required, a pilot may, if approved by appropriate aviation authorities, exceptionally act as the second signatory. The licensed engineer/technician should instruct the pilot on which controls have been disturbed and the limits of the area to be checked, but should include freedom and sense of movement, as well as simple assembly and locking. The full procedure, which should be defined in the organisation's Maintenance Exposition or Procedures Manual, is then to be adopted on return to base.

The written statement heading the certification should include a description of the disturbance to the control and a range that is to be checked, *ie* from point to point.

Note 1: It should be noted that duplicate inspections are not a requirement under JAR-145 or JAR-OPS. However due to UK CAA requirements, maintenance carried out on UK registered aircraft by other national maintenance bases includes the requirement for duplicate inspections and it is the operator's responsibility to ensure compliance.

Note 2: FAA requirements for RII differentiate between aircraft types certificated for 9 seats or less, subject to an Approved Aircraft Inspection Programme (AAIP) and those of 10 seats or more, subject to Continuing Analysis and Surveillance. The AAIP does not require RII/duplicate inspection. Further information can be found in 14CFR Part 135.411/419/429/431. Nevertheless, it is recommended that OGP Member standards require that the maintenance of aircraft subject to AAIP when on contract to the OGP Member include RIIs. Furthermore, those operators providing services that are not contracted should be encouraged to adopt a RII policy in respect of their aircraft that are subject to the less restrictive AAIP.

Note 3: The requirement for an operator to complete duplicate inspections after disturbing a control may be mandated in the contract where it is not required by the local regulator.

4.5.3 Aircraft Minimum Equipment List (MEL)

Flight crews and maintenance personnel must always have available for reference an aircraft Minimum Equipment List (MEL) or Minimum Departure Standard (MDS) for the appropriate aircraft type and the local airworthiness authority should approve these. Where a MEL is not available, full equipment serviceability will be required.5.1 Helicopter standards

Section 5 Contents

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5 Helicopter operations

5.1 Helicopter standards

5.1.1 Minimum operational & role-specific equipment

In addition to the minimum equipment recommendations of Appendix 7 and role-specific equipment specified in other Sections of this Guide, the requirements in the following paragraphs should also be considered.

5.1.2 Piston-engine helicopters

Piston-engine helicopters should not be used.

5.1.3 Multi-engine helicopters with single-engine performance

Multi-engine helicopters capable of sustaining a 1% net climb gradient at or above the lowest safe altitude with one engine inoperative (OEI) and flown with two pilots should be used when any of the following conditions exist:

a) The environment is Hostile (see Appendix 6.2.3).
b) Any portion of the flight is performed at night.
c) Any portion of the flight will be in instrument (non-visual) conditions.

5.1.4 Multi-engine helicopters without single-engine climb performance, or single-engine helicopters, or single pilot

Multi-engine helicopters without single-engine climb performance in cruise, or single-engine helicopters, or single pilot should ONLY be used when the following conditions are met:

a) When permitted by local regulatory authorities.
b) The environment is determined to be non-hostile (see Appendix 6.2.4).
c) Operations are Day VFR only, and for single-engine helicopters, the aircraft is landed 30 minutes prior to official sunset.
d) Acceptable Search & Rescue Services are available (see Section 12 and Appendices 14 & 17).
e) Continuous Flight Following is maintained.

5.1.5 Helicopters operating in a hostile sea environment

If the sea temperature will be less than 10°C during the flight a risk assessment should be completed to determine if exposure suits should be worn by occupants (see Appendix 6)

5.2 Helicopter performance classes

Helicopters are operated in accordance with a comprehensive and detailed code of performance in compliance with ICAO Annex 6, Part III, Section II, Chapter 3. Since Performance Classes are often misunderstood or misquoted a description based on ICAO Annex 6 are provided in the following table:

Class 1	If an engine fails, the helicopter is able to land within the rejected takeoff area or to safely continue flight to an appropriate landing area.	**General Instructions:** 1) Helicopters must be certificated in Category A
Class 2	If an engine fails, the helicopter is able to safely continue the flight, except when the failure occurs early during takeoff or late in landing, in which case a forced landing may be required.	**General Instructions:** 1) Helicopters must be certificated in Category A. 2) Operations must not be conducted from/to elevated heliports or helidecks at night or in a hostile environment unless it can be demonstrated that the probability of power unit failure during the exposure time at take off and landing is no greater than $5x10^{-8}$ per take-off or landing.
Class 3	If an engine fails, a forced landing is required for single-engine and may be required for multi-engine helicopters.	**General Instructions:** 1) Helicopters must be certificated in Category A or B. 2) Operations are allowed only in a non-hostile environment, except that flights over-water in a hostile environment for up to 10 mins per flight are permitted. 3) Operations are not allowed at night or when the ceiling is less than 600 ft above the local surface, or the visibility is less than 800 metres. 4) Operations must not be conducted from/to elevated heliports in a non-hostile environment unless it can be demonstrated that the probability of power unit failure during take off and landing is no greater than $5x10^{-8}$ per take off or landing.

The Performance Classes should not be confused with Categories A & B which denote the build/certification standard of the aircraft out of which a performance capability is derived (see also 14 CFR/JAR 27/29). In general, the majority of present generation helicopters are not designed to full Category A and unlimited Performance Class 1 standards. Therefore, for operations in a hostile environment, Performance Class 2 helicopters are accepted by OGP although preference will be given to Performance Class 1, if available. In some operating environments it may be possible to operate Performance Class 2 helicopters to Performance Class 1 standards with minimal impact on payload. Such an approach is strongly encouraged. Where Performance Class 2 helicopters are taken on contract, the operation should be able to demonstrate, either separately, or as part of its Safety Case that the probability of power unit failure during the exposure time at take off and landing from elevated helidecks is no greater than $5x10^{-8}$ per take-off or landing.

5.3 Fuel planning

While parameters covering all circumstances cannot be clearly laid down, the following should be used as guidance for fuel planning unless otherwise stated in relevant regulations or Operating Manuals.

5.3.1 IFR flight plan

Fuel should be sufficient for the leg to destination plus the leg to an alternate plus 10% of the above as a navigation contingency, plus 45 minutes. An allowance should also be made for start-up and taxi.

Note: Fuel computations for the leg to the alternate should be calculated at the low altitude cruise fuel consumption if this is likely to be the case.

5.3.2 VFR flight plan

Fuel should be sufficient for the proposed route plus 10% of the route fuel, plus 30 minutes at the cruising speed consumption. An allowance should also be made for start-up and taxi.

Note: The above requirements are in addition to unusable fuel as listed in the aircraft Flight Manual.

5.4 Use of offshore alternates

The reliance on offshore installations as alternates should be avoided wherever possible and is only acceptable in certain circumstances when the onshore alternative is equally unacceptable. Advice should be sought from the OGP Member's Aviation Advisor, especially for long-term requirements. As a minimum, the following conditions need to be met:

- An offshore alternate shall be used only after a Point of No Return (PNR). Prior to PNR, onshore alternates shall be used.
- One engine inoperative landing capability shall be attainable at the alternate.
- Deck availability shall be guaranteed. The dimensions, configuration and obstacle clearance of individual helidecks or other sites shall be assessed in order to establish operational suitability for use as an alternate by each helicopter type proposed to be used.
- Weather minima shall be established taking accuracy and reliability of meteorological information into account.
- The helicopter Minimum Equipment List shall reflect essential requirements for this type of operation.
- An offshore alternate shall not be selected unless the operator has published a procedure in the Operations Manual approved or accepted by the regulatory Authority.
- When operating offshore, any spare payload capacity should be used to carry additional fuel if it would facilitate the use of an onshore alternate.

The offshore landing environment of a helideck that is proposed for use as an Offshore Alternate should be pre-surveyed and, as well as the physical characteristics, the effect of the wind direction and strength, and turbulence established. This information, which should be available to the aircraft captain at the planning stage and in flight, should be published in an appropriate form in the Operations Manual (including the orientation of the helideck) such that the suitability of the helideck for use as an offshore alternate can be assessed. The alternate helideck should meet the criteria for size and obstacle clearance appropriate to the performance requirements of the type of helicopter concerned.

The use of an offshore alternate is restricted to helicopters that can achieve one engine inoperative (OEI) in ground effect (IGE) hover at an appropriate power rating at the offshore alternate. Where the surface of the offshore alternate helideck, or prevailing conditions (especially wind velocity), precludes an OEI in ground effect (IGE) hover, OEI out of ground effect (OGE) hover performance at an appropriate power rating should be used to compute the landing mass/gross weight. The landing mass/gross weight should be calculated from graphs provided in the relevant part of the Aircraft Flight Manual. When arriving at this landing mass, due account should be taken of helicopter configuration, environmental conditions and the operation of systems that have an adverse effect on performance. The planned landing mass of the helicopter including crew, passengers, baggage, cargo plus 30 minutes of Final Reserve fuel, should not exceed the OEI landing mass at the time of approach to the offshore alternate.

When the use of an offshore alternate is planned, an operator should not select a helideck as a destination or offshore alternate unless:

- The aerodrome forecast indicates that, during a period commencing one hour after the expected arrival at the destination and offshore alternate the weather conditions will be at or above the following planning minima:

  cloud base 600 ft (180 m) day/800 ft (240 m) night

  visibility 4 km (2.5 miles) day/5km (3 miles) night
- Where fog is forecast, or has been observed within the last two hours within 60 nm of the destination or alternate, offshore alternates should not be used.
- Before passing the point of no return (PNR), which should not be more than 30 minutes from the destination, the following actions should have been completed:
  - confirmation that navigation to the destination and offshore alternate can be assured;

- radio contact with the destination and offshore alternate (or master station) has been established;
- the landing forecast at the destination and offshore alternate has been obtained and confirmed to be above the required minima;
- the requirement for One Engine Inoperative (OEI) landing has been checked to ensure that they can be met;
- to the extent possible, having regard to information on current and forecast use of the offshore alternate and on conditions prevailing, the availability of the offshore alternate should be guaranteed by the rig operator in the case of fixed installations and the owner in the case of mobiles until landing at the destination, or the offshore alternate, has been achieved (or until offshore shuttling has been completed).

5.5 Composition of flight crew

	VFR	IFR and Night
Single-engine	1†	Not permitted on OGP Operations
Multi-engine <5,700 kg (12,500 lbs)	2†‡	2
Multi-engine >5,700 kg (12,500 lbs)	2	2

† *Under no circumstances should the controls of a helicopter be left unattended while either engines are running or rotors are turning.*
‡ *Exceptionally one pilot may be utilised for "non-hostile" operations provided the aircraft is certified for single pilot operations and performance/requirements dictate. All cases of proposed single pilot operation should be referred to the Aviation Advisor.*

5.5.1 Two pilot operations

Two pilot operations will always be required for:

- IFR or night operations.
- Operations into an offshore "hostile" environment as defined in Appendix 6 – 2.3.
- Where the maximum approved passenger seating configuration is more than nine (9).

5.5.2 Single pilot operations

Where aircraft are certified for single pilot operations and in the view of the OGP Member's Aviation Advisor are practical, then this mode of operation will be considered. Among the factors affecting the decision are:

- Workload.
- Flight Conditions.
- Whether flights are conducted by day or night.
- Whether flights are conducted under Instrument Flight Rules.
- Traffic density.
- Aircraft equipment (and the interface with approach and en-route aids) and whether an operative approved autopilot system is fitted.
- Length and nature of intended flights.

5.6 Flight & duty time

5.6.1 Limits

Limits are normally imposed upon the amount of flying time, total hours of duty, and mandatory rest requirements by the regulatory authorities.

Unless more stringent limits are imposed by regulatory authorities, the limits listed in this Guide should apply for both flight and duty time.

Exceptions to the guidelines contained in this Guide may be applied after consultation with OGP Member's Aviation Advisors for operations in remote field locations or where crews rotate on a scheduled basis.

5.6.2 Fatigue related work

This type of work may be highly repetitive flight operations such as, external lift, inter-rig, or platform work requiring many landings/takeoffs per hour or single pilot operations in hot climates.

When these types of fatigue-causing operations are being flown it may be necessary to vary crew schedules to more conservative levels.

Operation-specific crew duty time limitations are listed in the applicable portions of this Section and Section 7 for operations such as geophysical survey and external load operations.

5.6.3 Maximum flight times

Pilots should not fly in excess of the maximums listed below or those listed in mission specific portions of this Guide, including time that might be flown in support of other companies/customers.

Single Pilot

8 hours daily flight time constitutes a flight period.

35 hours in any 7 consecutive day period.

100 hours in any 28 consecutive day period.

1,000 hours in any 365 consecutive day period.

Dual pilot

10 hours daily flight time constitutes a flight period.

45 hours in any 7 consecutive day period.

120 hours in any 28 consecutive day period.

1,200 hours in any 365 consecutive day period.

5.6.4 Maximum duty & minimum rest times:

Rest: A minimum of 10 Hours of consecutive rest available following a flight period, however this may not be sufficient after considering workload, roster schedules and duty start times. Notwithstanding an appropriate rest period will be established for all operations with guidance from the NAA and/or OGP Member's Aviation Advisors

Duty: 14 hour duty day includes: flight planning, pre-flight, flight time, post flight, completion of any associated maintenance or paperwork, any "non local" travel time, and commences when the pilot reports for duty and ends when is no longer on duty.

5.6.5 Rest for rotating crews

Crews on rotating assignments that arrive following prolonged travel flights should not, on arrival at their base of operations, be scheduled for duty on OGP Member's flights until the requirements detailed in paragraph 5.6.4. have been met. Aviation Advisors should be consulted to review these requirements.

5.6.6 Night standby duty

Night stand-by duty may require additional pilots to be made available. The principles to be observed are:

- The requirements of the regulatory authority in terms of flight and duty limitations must be met.
- The maximum FDP/Flying Hours specified must be observed.
- After a day duty period, each pilot should not normally have less than 12 hours rest.

- If the pilots nominated for night standby duty (at their place of rest) are not used for such, then they may be considered available for duty on the following day period. Otherwise, they will normally be due for 12 hours rest before recommencing duty.

5.7 Offshore helicopter life jackets & aircraft homing devices

Crew life jackets should be of constant-wear type, fitted with a homing device transmitting on the appropriate international and/or national aeronautical distress frequencies in areas where suitable air and/or sea-borne homing equipment is available to Search & Rescue Services. In areas where such services are unreliable or nonexistent, management should consider the provision of homing equipment in contract aircraft. Such a decision should be taken in the context of the Aviation Safety Case.

5.8 Rotors Running Refuelling (RRRF)/helicopter rapid refuelling

Rotors running refuelling may be authorised for both on and offshore operations. However, local management should be aware of the additional risks involved and seek the OGP Member's Aviation Advisor advice, giving sufficient notice for comment or to render practical assistance.

If it is an operational requirement to carry out rotors running refuelling the operator shall ensure that there are written procedures and stipulate that all staff involved have formal training. The risks may be further minimised by using pressure (closed system) refuelling.

More detailed guidance is provided in Section 7.5 of this guide.

5.9 Crane-helicopter operational procedures

When helicopters are approaching, manoeuvring, taking off or running on the helideck, cranes are to be shut down, with the crane operator vacating the cab.

5.10 Radio silence – perforating operations

5.10.1 Nature of hazard

To enable explosive operations to proceed safely and reduce disruption to other operations, it is essential to identify and minimise all significant potential sources of stray currents and voltages. This comprises perforating, sidewall sampling, formation interval testing, explosive cutting and explosive backing off.

5.10.2 Radio silence

Radio Silence not limited to telecommunications, but extended to cover all precautions taken to reduce or eliminate potential sources of stray currents and radio induced voltages.

The area in which transmissions are controlled will include all vessels and helicopters within 500 metres (1640 ft) of the installation.

Radio Silence will commence during the preparation of explosives and continue until the explosive device is more than 75 metres (250 ft) below the seabed. During this period no helicopter is permitted to operate within the 500-metre zone. "Receive only" radios can also remain in operation during radio silence.

5.11 Specialist roles

5.11.1 Land seismic operations

Only approved helicopter types, operated by Contractors approved by the OGP Member's Aviation Advisor, shall be used in support of seismic operations. In general, where a safe forced landing cannot be reasonably achieved, twin-engine types should be used. However, it is recognised that for certain high altitude operations particular single-engine types may be the safer option. In any event, further advice should be sought from the Aviation Advisor. Further guidance on seismic helicopter operations is to be found at Appendix 8

5.11.2 Winch operations.

Winching operations, including training, should only be undertaken when judged operationally essential, and then strictly in accordance with the specified procedures.

Twin-engine helicopters shall always be used for winch operations and shall have a single-engine Out of Ground Effect (OGE) hover capability at all stages of the operation other than for actual life saving use.

Marine support operations e.g. ship pilot transfer should routinely be conducted in accordance with the recommendation of the International Chamber of Shipping Guide. Further detail is at Appendix 9.

It should be noted that training should always be carried out with full single-engine hover capabilities at the operator-designated heights ASL/AGL.

5.11.3 Airborne geophysical survey requirements

Geophysical survey flying is one of the more demanding flight regimes in which OGP contracted aircraft operate. This is applicable to both fixed and rotary wing aircraft. To reflect the increase in difficulty of this type of flying, the requirements at Appendix 10 demand greater role experience and more stringent operational controls than those outlined in the standard conditions for helicopters.

5.11.4 Aerial pipeline inspection

Both helicopters and fixed-wing aircraft are employed in pipeline inspection work. They need to operate at altitudes lower than optimum for normal operations and are subject to greater hazards. Standards for the conduct of such inspection work are at Appendix 11.

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Section 6 Contents

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6 Fixed-wing operations – public transport & aerial work

6.1 Fixed-wing aircraft standards

6.1.1 Minimum & operational role-specific equipment

In addition to the minimum equipment recommendations contained in the Table of Equipment Fit and specific operational role equipment recommended in other Sections of this Guide, the following should be considered.

6.1.2 Certification recommendations

Wherever practical those aeroplanes that are certified to Federal Aviation Regulation US 14CFR Part 25 (or equivalent), or have documented and demonstrated single-engine performance which meet the criteria of Part 25, should be used.

Those aeroplanes certified to Part 25 (or equivalent) have higher performance criteria than those certified to US 14CFR Part 23 (or equivalent).

It should be understood that certification standards other than those in Part 25 (or equivalent) for twin-engine aeroplanes may vary significantly relative to demonstrated and documented performance criteria.

6.1.3 Multi-engine aeroplanes with single-engine performance

Multi-engine aeroplanes capable of sustaining a 1% net climb gradient at or above lowest safe altitude with one engine inoperative (OEI) and flown using two pilots should be used whenever any of the following conditions exist:

- When operating in a hostile environment (see Appendix 6).
- Any portion of the flight will be in instrument (non-visual) conditions.
- When operating on an extended over water flight.
- Any portion of the flight is planned for, or performed, at night.

6.1.4 Multi-engine aeroplanes without single-engine performance

Multi-engine aeroplanes without single-engine performance (as described in paragraph 6.1.3 above) or Piston powered aeroplanes should ONLY be used when the following conditions are met:

- When permitted by local regulatory authorities.
- The environment is determined to be non-hostile (see Appendix 6).
- Flights are conducted over reasonably short distances and favourable terrain.
- Operations are in Day Visual conditions (VMC), and the aircraft is landed 30 minutes prior to official sunset.
- Acceptable Search & Rescue Services are available (see Section 12 and Appendices 14 & 17)
- Continuous Flight Following is maintained.

6.1.5 Piston powered multi-engine aeroplanes

In some regions access to Turbine powered multi-engine aeroplanes is limited which may necessitate the use of Piston powered aeroplanes when all of the conditions in paragraph 6.1.4 above cannot be met, particularly for short notice or infrequent flights. In such cases the following criteria should be considered:

- Restrict aircraft loading to ensure a net take-off flight path to clear obstacles by not less than 35 feet to a height of 1500 feet above the landing aerodrome, assuming the loss of an engine on

achieving V-Broc (VY) (speed for best rate of climb) with retraction of the undercarriage and flaps complete and the propeller on the inoperative engine feathered. (In practice this means a gross single-engine climb rate of at least 200 feet per minute.) If the climb out criteria cannot be met, followed by a safe single-engine circuit to land, then management must be made aware of this and continued use should only follow a formal risk assessment. This would include a review of the area ahead of the runway into which the forced landing would have to be made.

- En-route performance planning for all flights must ensure the capability of maintaining the minimum safe altitude for IFR flight over the route to be flown or any diversion from it, with one power unit inoperative.

6.1.6 Single-engine aeroplanes

If single-engine aeroplane operations are considered:

- preference should be given to single-engine turbine powered aeroplanes;
- the conditions contained in paragraph 6.1.4 should be met;
- the aeroplane should comply with all the minimum equipment recommendations in the Equipment Fit Table and other sections of this guide (where applicable); and
- a risk assessment should be completed with identified risk reduction measures implemented to reduce the risk to that As Low As Reasonably Practicable (ALARP).

6.2 Airfields – minimum requirements

As the general requirements imposed by National Aviation Authorities (NAA) vary widely from country to country local airfield standards should be assessed by the OGP Member's Aviation Advisor. If assessed as being acceptable the general requirements imposed by the NAA should be considered the minimum standard which must be satisfied.

Where there is no locally provided guidance available the minimum requirements contained in ICAO Annex 14 Part 1 (Aerodromes) should be applied.

6.3 Fuel planning

While parameters covering all circumstances cannot be clearly laid down, the following should be used as guidance for fuel planning unless otherwise stated in relevant regulations or Operating Manuals.

6.3.1 IFR flight plan

Fuel should be sufficient for the leg to destination plus the leg to an alternate, plus 10% of the above as a navigation contingency, plus 45 minutes holding fuel (30 minutes for turbine aircraft). A contingency should also be allowed for start-up and taxi.

6.3.2 VFR flight plan

Fuel should be sufficient for the proposed route plus 10% of the route fuel, plus 30 minutes at the cruising speed consumption.

Note The above requirements are in addition to unusable fuel as listed in the aircraft Flight Manual.

6.4 Composition of flight crew

	VFR	IFR and Night
Single-engine	1	Not recommended on OGP operations
Propeller driven <5,700 kg (12,500 lbs)	2†	2
Pure jet and propeller driven >5,700 kg (12,500 lbs)	2	2

† *All cases of proposed single pilot operation should be referred to the OGP Member's Aviation Advisor*

6.4.1 Two pilot operations

Two pilot operations are usually required when operating in support of the OGP Member, and will always be required for:

- IFR or night operations.
- When mandated by the regulatory authority.

6.4.2 Single pilot operations

Where aircraft are certified for single pilot operations and in the view of the OGP Member's Aviation Advisor are practically operable by a single pilot under the local operating conditions, then this mode of operation may be considered. Among the factors affecting the decision are:

- Workload.
- Flight Conditions.
- Whether flights are conducted by day or night (single pilot not recommended for night operations).
- Whether flights are conducted under Instrument Flight Rules (single pilot operations not recommended).
- Traffic density.
- Length and nature of intended flights.
- Whether flights involve departure or arrival at major Control Zones.
- Whether traffic flow is managed and STARS/SIDS apply

6.5 Flying hour limits – recommended maximum

Flying hour limitations for pilots are usually specified by the local Regulatory Authority. However, the limitations imposed are often set at a level greater than that at which fatigue may set in. To ensure that pilots are not overly exposed to fatigue while in support of an OGP Member's operations, the flight and duty time limitations specified in Section 5 Helicopter Operations (paragraph 5.6) of this Guide are also applicable to aeroplane operations.

6.6 Aircrew life jackets & aircraft homing devices

See Section 5 Helicopter Operations (paragraph 5.7) for operations over water where life jackets are required to be worn by the aircrew.

6.7 Sideways facing seats

Wherever possible, when chartering fixed-wing aircraft, those without sideways facing seats are to be preferred. If this is not practical and the seats cannot be repositioned in either the forward or aft position, use of these seats should be avoided during take-off and landing, unless shoulder restraint is used and tightened properly, and passengers briefed accordingly.

6.8 Specialist roles

6.8.1 Airborne geophysical survey requirements

Geophysical survey flying is one of the more demanding flight regimes in which OGP contracted aircraft operate. This is applicable to both fixed and rotary wing aircraft. To reflect the increase in difficulty of this type of flying, the requirements at Appendix 10 demand greater role experience and more stringent operational controls than those outlined in the standard conditions for fixed-wing aircraft and helicopters.

6.8.2 Aerial pipeline inspection

Both helicopters and fixed-wing aircraft are employed in pipeline inspection work. They need to operate at altitudes lower than optimum for normal operations and are subject to greater hazards. Standards for the conduct of such inspection work are at Appendix 11.

Section 7 Contents

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7 Fuel system design & management

7.1 Design, operation & inspection references

The following should be used as the basic reference documents for airbase fuelling system design/inspection/operational considerations, and construction or major rework of existing airbases where no local guidance exists.

a) National Fire Protection Association (NFPA) NFPA 407.

b) UK CAP 437 (for helidecks).

7.2 Design & periodic review

In all cases, a review by an OGP Member's Aviation Advisor should be incorporated into all preliminary and critical design processes for Company airbase refuelling system construction or modification.

All fuel and supporting fire suppression systems, including those provided by airports or fixed base operators should have annual safety, technical and quality assurance reviews by appropriate regulatory authority or an OGP Member's Aviation Advisor and reviews every six months by the Operator. Records of such reviews and any remedial actions taken should be maintained.

7.3 Variances

Any variation to the above references should be forwarded to the OGP Member's Aviation Advisor for considerations as early as possible.

7.4 Fuel quality control

7.4.1 General responsibilities & guidelines

It is essential that the Operator prepares formal procedures detailing all necessary equipment checks and fuel system quality control.

The ultimate responsibility for the quality of fuel loaded onto an aircraft is the Captain of the aircraft.

All fuel delivery systems, including portable systems, will be fitted with filtration of the water blocking (Go-No-Go) type meeting the specifications of API 1583, which locks fuel flow when water is present.

Fuel filter canisters should be clearly marked with the next date of change or inspection cycle, and data recorded in an appropriate inspection record.

All filters should be replaced at nominated pressure differentials as annotated on the filter housing or as recommended by the manufacturer, but as a minimum will be replaced annually.

All fuel storage supplies, including drums, should be allowed to settle 1 hour for each 1 foot of fuel depth after the tanks have been resupplied or barrels moved to vertical, before samples are taken and fuel is approved for use. Fuel tanks should have a sign placed on the tank during settling, indicating the time at which the tank can be used (settling is complete). If the fuel system is serviced by only one tank, the fuel dispensing unit will also have a sign with wording as noted for the bulk tank.

All steel tanks should be lined with an approved epoxy liner unless the tanks are constructed of stainless steel.

All fuel supply tanks should be installed with a slope and have a sump drain at the tank low point for sampling purposes and should have a fuel quantity sight gauge.

The preferred plumbing for fuel systems is stainless steel and connections welded. If common steel is used it must be lined with an approved epoxy.

Only personnel who have received formal documented initial and recurrent training should be used for refuelling aircraft. Aviation services can be of assistance in providing a sample training programme.

All fuel system static grounds should have continuity checks performed periodically, annually as a minimum.

It is recommended that frangible "witness" seals be used on tank openings, especially transport tanks, after filling to allow verification that contents are untampered.

7.4.2 Aircraft fuel system sampling guidelines

All required fuel samples as noted in the paragraphs below should be retained until flights are completed for that day. At remote locations, when refuelled by a commercial fuel vendor, it may not be practicable to retain fuel samples.

The following should be sampled daily, with a minimum individual sample size as noted below into a clear jar with a screw top, each tested for water, and marked with the sample source:

a) Aircraft fuel tank sumps drained and sampled into one container prior to the first flight of each day (½ litre minimum sample size, unless specified differently by the airframe or water detection device manufacturer).
b) Each fuel tank sump (2.0 litres).
c) Each fuel filter and monitor (2.0 litres).
d) Each fuel nozzle, prior to first refuelling of the day (2.0 litres).

It is also recommended that the water test capsule results be retained with the samples.

Transport fuel tanks: Fuel going into the fuel transport tanks from fuel trucks/bulk systems must be "certified" (see paragraph 7.4.3.e below) fuel, before filling the tanks a clear/bright and water test should be completed, and results noted on the tank records. If the fuel does not pass these tests or is not from a "certified" source, then it should be rejected.

Bulk fuel sampling: See paragraph 7.4.3.e below.

7.4.3 Bulk fuel guidelines

The following inspection items should be used as a minimum guide for a fuel quality control system:

- A daily log will be used to record the following items:
  a) The age and delivery date of storage fuel.
  b) Sample and water test results from the fuel tank sumps, all filters and monitors, and all fuel nozzles.
  c) Differential pressure readings.
  d) Fuel Filter changes – annual as a minimum.
  e) Certification of fuel. Bulk delivery fuel should always be accompanied by a Certificate of Release. Fuel should be sampled, visually inspected for appearance and contaminates, chemically tested for water and measured for density, before delivery into storage tanks. Maximum variance of the density compared to the density on the Certificate of Release should not exceed 0.003.
- The interior of all tanks, tank seals, and pressure relief valves should be inspected on an annual basis, and all gauges/pressure relief valves should be calibrated annually unless the manufacturer specifies differently.

- Microbe growth testing
  a) Initial testing to establish "normal" microbe level: adopt a random routine testing of a few tanks on a quarterly basis. This should include primary supply tank(s), and several mobile tanks (if used).
  b) Long-term testing: once the "normal" microbe level is established as noted above, it is recommended that fuel supplies be tested on a six-month interval.
  c) Fuel quality indicators: if any contra-indications from tank drains are apparent, such as dark coloured (brown, black) water, sulphide smells, water and fuel with a frothy or lacy interface, immediately conduct a test, as these strongly indicate microbial activity within the recent time span.
- Microbe growth treatment

  If the microbe growth test is positive, use of the affected tank(s) should be suspended and the following protocol followed. Once the protocol has been followed then a repeat microbe presence test should be completed.

  a) Bulk or transport tanks: full tank cleaning including disinfecting the tank surfaces with Chlorex bleach (or equivalent) followed by fresh water rinsing, inspect and replace all downstream contaminated filter elements.
  b) Aircraft tanks and filters: filters should be replaced and tanks drained and cleaned following the manufacturer recommendations.
  c) Use of microbes treatments: any microbe treatments, such as "BioBar" or equivalent should be used with caution and the aircraft manufacturer contacted to determine is use of such treatments are allowed for that model aircraft's fuel.

7.4.4 Drummed fuel guidelines

The following precautions are applicable to operations that involve the use and storage of drummed fuel:

- Drums should be tight with no broken seals prior to use.
- Drum stock should be consumed within 12 months of packaging date.
- Drums will be stored with the bungs horizontally at the 9 and 3 o'clock positions, with the bung end tilted slightly lower than the opposite end (non-opening), to prevent moisture/rust formation inside the bung end of the barrel.
- Each drum of fuel should be sampled and tested with water detector capsules or an approved paste to confirm no water contamination is present and visually inspected for proper colour and contaminates.
- Pumps used for drum refuelling should be equipped with water blocking filtration system.
- Pump standpipes should extend no closer than 50mm (2 inches) of the drum bottom.
- Before fuelling the aircraft, a small amount of fuel should be pumped into a container to remove any contaminants from the hose and nozzle.
- The standard marking for a contaminated drum is an "X" marked on the bung end.

7.5 Rapid refuelling (refuelling with engines running)

7.5.1 Approvals & procedures

If an operational requirement to conduct rapid refuelling exists the following should be in place:

a) Approvals: company management should approve the specific circumstances in which rapid refuelling may be conducted.
b) Training: the Operator's approved Operations Manual will include written procedures to be followed for the refuelling operation. The aircrew and ground support staff should have completed the Operator's training programme before refuelling is considered.

7.5.2 Guidelines

In addition to any local regulatory requirements the following minimal guidelines will be used for rapid refuelling:

a) A pilot shall remain at the controls at all times.

b) A minimum of three individuals are required for the refuelling operation, one for refuelling, one for pump shut-off, and one for fire watch (with appropriate extinguisher).

c) Passengers are to disembark prior to the refuelling operation commencing.

i) If for safety reasons the Pilot-in-Command decides to refuel with the passengers on-board the aircraft the passengers should be informed of this decision and actions to take in the event of a fire.

ii) All seat belts are to be opened, the main exit door away from the side where refuelling is occurring should be opened, and no smoking will be allowed.

iii) Radios are not to be used during refuelling, and all anti-collision lights, radar, radio altimeter, transponder and DME equipment should be switched OFF.

iv) Prior to removing the fuel cap and inserting the fuel nozzle into the aircraft fuel tank, grounding wires running from the fuel station and from the fuel hose to the aircraft should be connected.

v) When refuelling is completed the Pilot-in-Command should verify that all equipment is removed, the fuel cap has been securely replaced and the aircraft is properly configured for flight.

7.6 Portable offshore fuel transport tanks

If no local regulatory guidelines are available, information may be obtained from the Combined Federal Regulations (U.S. CFR 49, Part 173.32) or from the Air Transport Association (ATA 103, Paragraph 2-11).

7.6.1 Recommended minimum maintenance

Where local authority has established a more stringent guideline, the most stringent should be used.

- A 5-year hydrostatic test required on the transporters. The data plate on the tank should state the test pressure requirement.
- An annual test on the pressure relief valve.
- Tanks should be inspected every 12 months;
  a) Check for build-up of sediment or evidence of microbial growth.
  b) If inspection reveals such growth or build-up of sediment exceeding 1/10 of the area of the tank bottom surface, cleaning should be accomplished.
  c) If the tank has an internal epoxy coating, inspect coating for evidence of chipping, flaking, or other deterioration.
- Jet fuel tanks should be cleaned with high pressure water or steam only. Under no circumstances should solvents, chemicals, or detergents be used.
- After cleaning with water, use squeegees and lint free mops to dry the tank surfaces. Assure removal of all free water, and allow the tank to dry thoroughly through natural ventilation as long as practicable.
- Maintain a record of tank inspection and cleaning using ATA Form 103.07 or similar.
- Dates indicating the inspection/test dates as prescribed in paragraphs 7.6.1.1-3 should be stencilled on the tank.

Section 8 Contents

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8 Training & experience

8.1 Flight crew training

8.1.1 Introduction

Initial and recurrent training is a vital factor in flight safety and must be carried out to ensure that high professional standards are set and maintained. The required experience levels are tabulated in Appendix 5 of this guide.

8.1.2 Use of Synthetic Training Devices

Flight crew training should be conducted in a Synthetic Training Device (STD) that replicates the model of aircraft being flown as closely as possible. It is preferred that the device be full motion with a visual screen that provides forward and peripheral imaging.

8.1.2.1 Categories

STDs fall into the following categories:

Flight Simulator (FS)

A full size replica of a specific type or make, model and series helicopter flight deck/cockpit, including the assemblage of all equipment and computer programmes necessary to represent the helicopter in ground and flight operations, a visual system providing an out of the flight deck/cockpit view, and a force cueing motion system. It is in compliance with the minimum standards for Flight Simulator certification.

Flight Training Device (FTD)

A full size replica of a specific helicopter type's instruments, equipment, panels, and controls in an open flight deck/cockpit area or an enclosed helicopter cockpit/flight deck, including the assemblage of equipment and computer programmes necessary to represent the helicopter in ground and flight conditions to the extent of the systems installed in the device. It does not require a force cueing motion or visual system for some levels of qualification.

Flight Navigation Procedures Trainer (FNPT)

A training device which represents the flight deck/cockpit environment including the assemblage of equipment and computer programmes necessary to represent a helicopter in flight conditions to the extent that the systems appear to function as in a helicopter. It is in compliance with the minimum standards for a specific FNPT Level of Qualification.

8.1.2.2 Applicability

Where available for the type, the use of approved Synthetic Training Devices for aircrew on sole-use long term contracts (12 months or greater) or repetitive short term contracts (2 or more per year) should be at a frequency of not more than 24 months (12 months preferred where appropriate Simulators are available regionally). Level C or Level D Flight Simulators are preferred.

Where a Flight Simulator is not available for the helicopter type or where the configuration of the Flight Simulator is not sufficiently representative of the commercial aircraft in use, the use of FTDs as an alternative may be accepted by the individual OGP Member Company in accordance with the following guidelines.

It is recommended that Synthetic Training Devices should include landing area visual simulations that are representative of those being used for landings by the respective operator. For example, offshore simulation training should include helideck visuals with markings representative of those being used in daily operations.

- Flight Training Device JAR Level 3 standards or equivalent for medium rotorcraft above 3175kg (7,000lb).
- Flight Training Device Level 2 for small rotorcraft with a maximum weight of 3175kg (7,000lb) or less and certified with nine or less passenger seats.

While it is recognised that the use of simulators allows practice in handling emergencies that cannot be practiced in the air, the emphasis of this training should be in the development of Crew Resource Management (CRM) for multi-crew aircraft or Aeronautical Decision Making (ADM) for single-piloted aircraft, including practice of CRM/ADM principles. When appropriate, this should be in the form of Line Oriented Flight Training (LOFT), the exercises for which shall be developed between the aircraft and the simulator operators themselves to provide 'real time' exercises using simulated local operational, weather and environmental conditions.

8.1.2.3 Conversion to new type

Current OGP guidelines specify 100 hours time on type for commanders and 50 hours on type for co-pilots. Simulator training, if provided, can reduce this time by 50%. However, when introducing new types into service or when changing to alternate types, to improve the benefits from the experience building element to meet this standard, it is more appropriate to have an integrated structured training program. Content of this program should be in accordance with Appendix 5A and 5C and Paragraph 4.3.2. This should consist of a dedicated training package that, through the benefits of the training, should enable a reduction of the overall hours required. A significant element of such a structured training program will involve STD training, which should include a minimum of 25% in the simulator and 25% in the aircraft with the remainder in either the aircraft or simulator. Further guidance is available from the OGP Member's aviation adviser.

8.1.3 Recurrent training

All pilots should receive annual recurrent training to the standards of appropriate civil aviation authorities, and flight checks at not less than a frequency of every six months for long-term operations. These flight checks should include an annual instrument rating proficiency check/renewal (where applicable), a proficiency check (including emergency drills) and an annual route check.

Where distinct climatic seasons exist, training related to the seasonal change is recommended.

Before being scheduled for flight duties in a new location, all crewmembers should receive as a minimum a documented Line Check, which includes an orientation of local procedures/policies.

8.1.4 Crew Resource Management training

An acceptable crew resource management (CRM) training programme should be required for all two pilot operations in airplanes and helicopters. Aeronautical Decision Making (ADM) training programs should be established for single pilot operations.

8.1.5 Dangerous goods training

Dangerous Goods Awareness training should be required for all pilots to ensure that they are aware of the requirements for the carriage of hazardous materials including relevant legislation, limitations and documentation. Even where dangerous goods are not carried by the aircraft operator such training also serves to highlight the hazard posed by undeclared dangerous goods that can often be carried in passengers' baggage and consigned freight.

8.1.6 In Command Under Supervision (ICUS) Flight Time

Pilots may log ICUS time, where allowed by local CAA. This time will be recognised as Command Flight Time in meeting the requirements of Appendix 5A, provided:

1) The flight time is logged while flying in the Captain's designated position.
2) Training records and the pilot's logs are maintained documenting each flight performed.
3) The Operator has a written ICUS training program establishing the syllabus and progression program.

8.1.7 Helicopter offshore night operations & training

A high degree of pilot training including cockpit resource management (CRM), specified night operating procedures, dual pilots and suitably equipped aircraft are essential for safe operations.

Where there is a requirement to carry out routine (or emergency) flights at night, then the operator shall establish appropriate training programs.

Only dual pilot crews should be used and both pilots will be qualified and hold a current instrument rating for the helicopter type being flown. For night operations Captains should, in the addition to the requirements specified in Appendix 5 of this guide, have the following qualifications:

1) Minimum of 25 hours of night offshore time.
2) Completed within the last 12 months initial or recurrent offshore night/IFR/CRM/deck landing proficiency training.

All pilots will maintain night/instrument recency of 3 offshore approaches and departures, including takeoff and landing, every 90 days. In latitudes where night time is limited during summer months, OGP Member Companies may adjust the currency requirement on an individual contract basis for that period.

8.1.8 Helicopter Underwater Escape Training (HUET)

HUET should be completed using an underwater escape simulator for all aircrew and frequent flying offshore passengers at intervals not to exceed 4 years if engaged in floatplane or offshore helicopter operations. This training should be completed in conjunction with wet dingy drills using emergency equipment similar to that installed on the aircraft.

The initial course of training should be scheduled for a minimum of one day.

HUET facilities should have the emergency exit mechanisms representative of the aircraft flown in offshore or water borne operations.

Where required by the OGP Member, HUET may also include training in the use of a 'rebreather' self breathing device or other emergency air devices. Such devices may be recommended where a risk assessment shows that a 'cold shock/gasp' effect will reduce survival times under water significantly.

All HUET trained personnel or their companies should maintain a documented record of the training completed.

8.1.9 Single pilot operations

Single pilot operations should only be used in a non-hostile environment during day VFR operations, and only after consultation with an Aviation Advisor.

Where aircraft operators/Company operations have single pilot and dual crew requirements, the preferred pilot progression is Co-Pilot in the multi-crew environment before progressing to Captain in single pilot aircraft. Then, back to multi-crew for ICUS training (see paragraph 8.1.6.) before moving to Captain in multi-crew.

8.1.10 Role-specific requirements

Types of role-specific operations often undertaken by Operator's aircraft in support of the Company include but are not limited to: offshore, low-level geophysical survey, external load-lifting, seismic, and pipeline survey.

Due to the specialised nature of many roles required to support OGP Members' activities, additional qualifications and experience is usually required. The additional qualification and experience requirements for a number of role specific operations are summarised in Appendix 5.

External (sling) load operations

Where external load operations are likely to be required, this should be specified in the contract, with a requirement that sufficient crews for the cover demanded are line-checked in this role before contract commencement. Pilots nominated for external load work should have the competence check formally signed off by a designated check and training captain.

Pilots should have 300 hours of external load experience, or 300 hours of long-lining, whichever is applicable.

Unless at least ten hours practical application has been achieved in the preceding six months, competence should be re-checked during Visual Base Check procedures, or an additional External Load Competence Check should be completed.

Spraying operations

Aircraft operators conducting spraying operations, for example in support of offshore oil spill response, should have a written syllabus for conversion and recurrent training of aircrew engaged in spraying. The training and recency requirements should be assessed by the OGP Member's Aviation Advisor.

SAR winch/hoist operations

Pilot training

1) Pilots will have completed a formal and recorded training scheme, plus a minimum of 10 hours of winching operations (50 hours where an exclusive SAR contract exists).
2) Recurrent training should include a minimum of three winch rescue operations every 90 days utilising a winch operator and the recovery of equipment such as a "cruciform" by grappling hook.

Crewman training

All personnel employed as winch operators, whether full time or part time, should:

1) be an employee or direct contractor of the helicopter operator.
2) have completed a formal and recorded training scheme specifically for winchmen, including the following items:
    a) Basic weight and balance.
    b) Aircraft safety and survival equipment.
    c) Emergency procedures – to include winch problems, fouling of the cable, severing of the cable, use of bolt croppers *etc*.
    d) Technical details of winch operation.
    e) First-Aid and cold water recovery techniques including cold shock and hypothermia.
    f) Wet dinghy drill.
    g) Search & Rescue/coastguard local organisation.

Wet and dry winching practical instruction which shall include at least twenty lifts as the winch operator and twenty lifts as the winchman, and have completed recurrent training every 90 days to include an aircraft safety and survival check.

Winch operator techniques may be practised either overland or water, providing the note above is taken into account, but over water training will be necessary for pilots and crewmen to practice the approach and lower into position in reduced visual reference conditions.

Seismic operations

For seismic operations, see the OGP report *Helicopter guidelines for seismic operations*, ref. 351.

Airborne geophysical survey operations

Comprehensive recommended practices including aircrew training, the International Airborne Geophysical Safety Association has developed a comprehensive set of guidelines for low level airborne geophysical survey operations. An extract of IAGSA's recommended practices is contained in Appendix 10.

8.1.11 Recency checks after absence

Recency checks for all pilots should be carried out after 28 or more days absence from flying and may be carried out by any suitable Senior/Line Check Captain but preferably, the Chief Pilot or Training Captain.

8.2 Support & technical personnel requirements

Technical and support personnel such as licenced/unlicenced engineers, loadmasters, and dispatchers, helideck attendants, aerial observers, cabin crew and radio operators should meet the minimum qualification and experience requirements presented in Appendix 5D1-3.

8.2.1 Maintenance personnel

8.2.1.1 Initial training

It is considered essential that all maintenance personnel receive formal training and have a minimum of 2 year's experience on type before issue of licenses or type approval for the type(s) of helicopters/airplanes to be covered. In countries where this is not required by the national licensing authority, then the aircraft operator must provide formal, general and type training for its certifying staff to meet the minimum requirements of Section 4.4 and Appendix 5D.

8.2.1.2 Continuation/recurrent training

Continuation/recurrent training will be conducted at a minimum period of every three-years and should include but not be limited to the following: changes in relevant regulatory requirements, organization procedures, the standard for the products being maintained; human factors issues identified from any internal or external analyses of incidents; and information on relevant airworthiness directives/bulletins or similar documents issues since the last training session.

8.2.2 Helideck attendant & personnel

Personnel engaged on helideck related duties should be provided with training that includes the provisions of the OPITO Training Guide and the experience as shown in Appendix 5D1-3.

8.2.3 Refuelling personnel

These persons shall have completed a formal training course at an approved/recommended training facility. It is recommended that a refresher-training course be undertaken at intervals not exceeding two years.

8.2.4 Air traffic controller

Controllers shall be licensed or unlicensed in accordance with the requirements of the country in which operations are taking place. In any case they must undertake formal training in handling and recording radio transmissions and any actions that may be required for normal and emergency operations. They should also be familiar with the company emergency and call-out procedures, and are required to keep a log of air traffic control radio transmissions.

8.2.5 Radio operator

Radio operators shall be VHF/HF licensed where applicable, with relevant experience of aircraft operations and procedures, and be completely familiar with aviation R/T terminology. Additionally, they should be completely familiar with company emergency and call-out procedures. They are responsible for flight watch and the R/T log of all aircraft communications. It is highly desirable that all communications and radio logs shall be in the English language.

8.2.6 Certified weather observers

When certified weather observers are required for operations under IFR or night conditions, the observers will attend periodic training to maintain certification in accordance with local requirements.

8.2.7 Cabin attendants

Cabin attendants shall have completed a formal and recorded course of training which should include coverage of the following items: Safety Equipment, First Aid, aircraft knowledge, Emergency Procedures, Loading Procedures, Documentation and the Handling of Dangerous Goods. Formal training shall be carried out annually. The operator may conduct the training course but it should be recorded formally and a syllabus should be available for reference. Training should include the full range of Emergency & Survival training as completed by pilots.

8.2.8 Dispatchers/traffic clerks

Such persons shall be completely familiar with the operation of aeroplanes or helicopters. They should also have a good understanding of basic weight and balance problems and manifest documentation.

8.2.9 Load master

For operational (and sometimes commercial) reasons, it is expedient to carry "load masters" who are not trained aircrew, for the control of passengers and freight during flight and while the aircraft is on the ground. These personnel should always be given basic training as defined under "Crew" above and then should be given crew status. Load Masters must have completed a formal and recorded course of training which should include coverage of the following items: Safety Equipment, First Aid, Aircraft Knowledge, Emergency Procedures, Loading Procedures, Documentation and the Handling of Dangerous Goods. The operator may run the training course, but it should be formally recorded and a syllabus should be available for reference. Formal recurrent training should be carried out yearly. Where Load Masters are used to calculate and supervise the loading, they must be trained for load and balance on the aircraft type in use. However, in every case, the Captain remains responsible for checking and accepting the loading and balance calculations.

8.3 Training records & programmes

Aircraft operators should be expected to maintain comprehensive training documentation that includes details of the training programmes provided to their personnel and required training frequency. Individual training records should be maintained for each person.

For long term or sole use contracts, aircraft operators should be expected to provide to the OGP Member:

a) a listing of personnel that meet the OGP Member's requirements, and

b) details of personnel changes which should be reviewed and accepted by the OGP Member's Aviation Advisor before they commence work.

Training records should be periodically reviewed by the OGP Member's Aviation Advisor. The aircraft operator will make these records and its training programmes available upon request.

Section 9 Contents

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9 Passengers & freight

9.1 General

9.1.1 Smoking

It is strongly recommended that smoking be prohibited at all times in aircraft

9.1.2 Alcohol & drugs

Personnel under the influence of alcohol or drugs must not be allowed to board any aircraft unless under medical supervision. The operator's check-in staff should be trained to recognise the signs of substance abuse and alert their management for appropriate action to remove the passenger from the flight manifest.

9.1.3 Operation of portable electronic devices

The use of small (laptop/notebook) portable computers by passengers in business aircraft may be permitted with the following provisions:

- The flight crew have been advised and agreed to their use.
- The equipment is switched off during take-off and landing.
- Any wireless transmitting devices installed on the computer (*eg* Wi-Fi, GPRS) are switched off before take-off and remain off for the duration of the flight.
- When not in use, the equipment should be securely stowed.

Due to the confined space in helicopter cabins, the use of laptop/notebook computers is not recommended.

Passenger operated devices specifically prohibited during flight include any transmitting device which radiates radio frequency signals such as Citizen Band radios, cellular/mobile telephones, wireless network cards in laptop computers (Wi-Fi, GPRS), and wireless email devices (*eg* Blackberry®). At the discretion of the aircraft operator use of equipment with these devices fitted may be permitted 'off-line' in flight if they have a 'flight mode' or the wireless device can be turned off before flight and remain off for the duration of the flight.

9.1.4 Weight & balance

Prior to takeoff, the pilot in command (PIC) should verify that fuel and oil requirements are correct, and weight and centre of gravity limits of the aircraft have been calculated and within the limits for flight.

9.2 Cargo

9.2.1 Weighing & documentation

Operators will verify the contents of each piece of cargo offered for transport by air. All cargo will be weighed separately and manifested.

9.2.2 Cabin area cargo

Cargo carried inside the passenger compartment should be adequately secured using cargo nets, seat belts, and/or tie-down straps, and must not obstruct normal or emergency exits

9.2.3 Hazardous materials (dangerous goods)

Passenger Flights

Most hazardous materials are prohibited onboard passenger flights including certain explosives, flammable fluids and gases, chemicals, and radioactive materials. Some items for example liquefied acetylene are forbidden for transport by air, whilst others are subject to very specific quantity, packaging and segregation limitations and in some instances may be allowed on passenger flights or restricted to cargo only flights.

Minimum requirements

Operators should provide pilots with guidance regarding all aspects of transporting dangerous goods. These instructions should not be contrary to the pertinent regulatory documents. Where regulatory guidance is lacking, the book 'Dangerous Goods Regulations' (DGR), published by the International Air Transport Association (IATA) is an acceptable substitute. The IATA DGR provides detailed information on what hazardous materials can be carried on passenger or cargo only flights including maximum quantities and packaging requirements. Operators must have approved procedures and personnel trained to IATA (or equivalent) standards in the event dangerous goods are to be transported.

Documentation

If hazardous materials are carried, the Pilot-In-Command should be provided with a 'Shippers Declaration of Dangerous Goods' form and comply with the Operator's Operations Manual.

9.3 Manifests

9.3.1 Information to be recorded

A passenger manifest should be raised for each flight and should have the following minimum information recorded: name of each passenger, passenger's company affiliation, passenger weight and that of personal baggage, the aircraft registration, and the weight of cargo. A computer-based manifesting system may be used, provided the pilot can be given the information.

9.3.2 Additional information

The form may also include a charge allocation and flight number if applicable.

9.3.3 Manifest changes/additions

If additions or deletions occur, the manifest will be revised to accurately reflect the names of the persons on board. This manifest should be left with or relayed to a responsible party, prior to departure, with instructions to retain until the trip is completed.

9.3.4 Passenger verification

Pilots and/or designated personnel should check the actual passenger names versus the pre-planned listing of personnel to be transported to verify only authorised passengers are carried.

9.4 Passenger weights

9.4.1 Aeroplanes under 5700 kg & all Helicopters

For aeroplanes with a maximum gross takeoff weight (MGTOW) less than 5700kg, and all helicopters regardless of MGTOW, actual body weights (including hand carried baggage) should be used.

9.4.2 Aeroplanes over 5700kg

At the discretion of both the Company and Operator (if authorised to do so by appropriate CAA), standard weights based on seasonal averages may be used when preparing a manifest for aeroplanes having a maximum gross takeoff weight in excess of 5700kg.

9.4.3 Baggage

All checked baggage will be manifested at actual weight for all aircraft.

9.5 Passenger briefings

9.5.1 Briefing frequency

Passengers should be properly briefed on emergency procedures, and other safety matters, prior to flight. If permitted by regulation, the pilot briefing may be abbreviated if a video briefing is provided or if on stopover flights.

9.5.2 Language

Where the dominant language is not English, the Operator should provide a briefing in the local language as well as English.

9.5.3 Minimum briefing requirements

The passenger safety briefing should include, but not be limited to, the following:

- A general description of the aircraft and the danger areas of jet engines, and turning propellers on aeroplanes, and the dangers of helicopter main and tail rotors.
- Procedures for boarding and exiting the aircraft.
- Smoking is not permitted around the aircraft/tarmac area, or during flight.
- Location of non-smoking and fasten seat belt illuminating signs.
- Seat belts and shoulder harnesses:
  - Location and use of seatbelts which should be worn at all times, and the location and use of shoulder harnesses which when fitted should be worn during all landings and takeoffs for aeroplanes and at all times for helicopters.
  - Passengers should be briefed not to invert the seat belt buckle (clasp opening device against the body). Operators may consider marking the outside of the seat belt clasps to improve ability to check for proper fastening. On configurations with upper torso restraints this may not be necessary if the clasp cannot be inverted.
  - The location and operation of oxygen masks as applicable.
  - Means of communication between the crew and the passengers, and actions in the event of an emergency.
  - Location and operation of doors, emergency exits emergency and life saving equipment such as fire extinguishers, first aid kit(s), life vests, life rafts, survival gear, and emergency radio equipment (ELT and EPIRBs).
  - Brace position for emergency landings.
  - Passengers to remain seated until the crew/ground crew open the doors and the captain tells them to disembark.
  - Location and review of passenger briefing card. Information contained in the briefing card should focus on safety equipment and emergency procedures.
  - Proper stowage of any hand carried items.
  - Use of personal electronic devices (laptops, personal organisers, *etc.*) and guidelines for use.

9.5.4 Additional helicopter briefing requirements

The following additional points should be covered with all helicopter passengers:

- Passengers should not disembark until instructed by the pilot, Helideck Landing Officer (HLO) (or Helideck Attendant), or other designated personnel.
- Never approach a helicopter from the rear. Do not proceed any further aft of the baggage compartment door than is necessary for the retrieval of baggage or freight.
- Always approach and leave the helicopter from the side, within view of the pilot or crewmember.
- Hand carry hats, glasses, and caps to prevent them from being blown away by the main rotor wash.

- Long objects over 1 meter must be carried flat to avoid contacting the main rotor blade.
- Under no circumstances will passengers depart or approach a helicopter on the up-slope (high) side when departing on slope landings.
- Under no circumstance, depart or approach a helicopter during start-up or shutdown.
- Passengers should be provided hearing protection and be instructed on its use.
- Only small, soft items such as a paperback book should be carried inside the passenger cabin of helicopters; hard-cased items that could be missile hazards or loose items that could be blown away such as newspapers should not be carried.

9.5.5 Additional helicopter briefing items for offshore flights

- Passengers who have completed helicopter underwater escape training (HUET) should sit adjacent to exits and, if possible, assist non-HUET trained passengers in the event of a ditching.
- If survival suits are worn (see paragraph 9.13.2.), passengers should have suits FULLY zipped with hood on (if equipped with integral hood) during take-off and landing over water, when flying below 500 feet over water, and as advised by the Pilot-In-Command.
- Passengers should be advised that in the event of an emergency landing on the water, the helicopter should not be evacuated until the rotor has stopped, unless instructed otherwise by the Pilot in Command.
- Passengers should be told not to inflate life vests until they are outside the helicopter.
- Passengers should be familiar with and know the location of emergency equipment such as life rafts, and know how to jettison the emergency exits, pop out windows, and deploy the life rafts outside the helicopter.
- Passengers should be briefed on the proper use of reference points for orientation during the event of a rollover ditching.
- Carriage of loose articles in the aircraft that could present Foreign Object Damage (FOD) risk or impede egress in the event of ditching (such as newspapers) should be discouraged.
- Passengers should be briefed on “NO STEP” areas.

9.5.6 Additional float plane briefing items

- All floatplane occupants should wear an approved life vest when operating over water.
- Passengers will be briefed on ditching procedures to include use of emergency exits, use of life vests, location and use of emergency equipment.

9.6 Video briefing

On long-term operations out of a fixed-base facility, a video briefing is recommended and should be shown to passengers periodically. If the video brief is the only form of briefing, it should be shown prior to each flight.

9.7 Multi-language operations

9.7.1 Translation requirements

It may be necessary to provide a translator for verbal briefing (can be a bilingual passenger) or prepare written or video instructions in the appropriate language (or alternatively subtitles).

9.7.2 Briefing cards

Graphics with international symbols or multi-language briefing cards should be used to convey briefing information to all passengers.

9.8 Passenger marshalling areas

9.8.1 Onshore & offshore

Secure waiting areas should be designated for aircraft passengers.

If a long term dedicated operation, written and graphic material should be displayed in those areas relative to aircraft safety and localised procedures.

The designated area may serve as a viewing room for video safety briefings and provide an area to weigh and manifest all outgoing passengers, baggage and freight on calibrated scales.

For all operations a clearly defined holding area should be designated for both incoming and outgoing passengers and freight.

9.8.2 Offshore

For all offshore operations, a suitable area should be identified to provide a safe passenger waiting area to prevent passenger loitering at the helideck or in the helideck stairwell.

An area should also be provided for changing into/from survival suits if worn, in order to minimise turn around time.

9.9 Passenger training

9.9.1 Helicopter Underwater Escape Training (HUET)

Passengers who frequently commute offshore by helicopter should receive helicopter underwater escape training (HUET). The training should include water survival training using the survival equipment normally found on the helicopter being used. See also paragraph 8.1.8.

Refresher HUET is recommended to be scheduled at periodic intervals of no less than once every four years.

If survival suits are equipped with rebreathing devices, passengers should be properly trained in the use of the system.

9.10 Passenger dress requirements

9.10.1 Field, remote & inhospitable areas

Passengers should wear clothing and footwear, appropriate to the environment, regardless of the flight duration.

9.10.2 Hostile environment offshore helicopter or float plane flights

For offshore helicopter or for floatplanes flights over hostile cold water areas (Appendix 6) passengers may be required to wear survival suits.

9.10.3 Non-hostile environment offshore helicopter or float plane flights

For offshore helicopter flights or for float plane flights over non-hostile waters (Appendix 6), to improve survivability in the event of a ditching, long leg pants, shirts with sleeves, and closed-toed shoes with skid-resistant soles are recommended.

9.11 Passenger & cargo management on helidecks

9.11.1 Clear helideck policy

Onshore helipads and heliports, and offshore helidecks are to be clear of all cargo and passengers that are being off loaded prior to passengers or cargo coming onto helideck/heliport to board the helicopter.

Cargo may only be left on a helideck if formalized procedures are established in writing and followed. These must include procedures for securing the cargo. Aviation advisory personnel should review the procedures prior to implementation.

9.11.2 High winds or adverse weather

In high winds (above 40 knots) or other adverse weather conditions, it may be necessary to have additional passenger and handling procedures in place for passenger movements.

9.11.3 Passenger control

A Helideck Landing Officer (HLO), (sometimes referred to as a Helideck Attendant) should be used to control passenger movement on helidecks. Alternatively one pilot may perform the HLO functions if there are two pilots onboard.

For single-piloted helicopters landing to a helideck with no HLO or Helideck Attendant, the helicopter should be equipped with a loud hailer (external speaker) and the pilot will land in a position that allows positive eye contact with the passengers as they approach the helicopter.

When offloading or loading passengers with the rotors turning, the pilot at the controls shall engage in essential cockpit duties only. Not included in essential cockpit duties are the following: manifesting, weight and balance calculations or customer paperwork. Primary attention will be given to the aircraft controls and identification of hazards and passenger movement in the vicinity of the aircraft.

9.12 Passenger seating

No passenger should occupy any aircraft seat where flight controls are installed, unless the passenger is thoroughly briefed regarding precautions against inadvertent movement of the flight controls, use of crew emergency exits, and specific reference should be made to any switches or controls that may be vulnerable to interference.

Aeroplanes

If readily removable, the flight controls should be removed from pilot stations when occupied by passengers.

Helicopters

No passenger should occupy the front seat of any helicopter, unless the conditions below are met:

- the cyclic and collective sticks have been removed from that seat position; and
- the pedals have either been disconnected or blocked to prevent inadvertent control input; and
- the passenger is thoroughly briefed regarding precautions against inadvertent movement of the flight controls in the pilot's position.

9.13 Survival equipment

9.13.1 General

All aircraft should carry safety equipment and survival kits that, as a minimum, comply with local civil aviation authority or regulation.

When determined necessary by the Aviation Safety Case or otherwise considered necessary, the OGP Member should request additional survival equipment subject to the operating environment and appropriate for the geographical location and climatic conditions; for example, offshore, arctic, jungle or desert.

The capacity of each survival kit should be proportionate to the number of persons carried in the aircraft.

9.13.2 Over-water flights

Over-water operations require special considerations for safety and survival equipment such as life jackets, immersion suits and emergency rafts.

9.13.3 Decision to use exposure suits

Immersion suits certified for use by the regulatory authority should be provided to crews and passengers for helicopter overwater operations in cold water hostile environments.

In the event that local regulatory controls do not address the issue of wearing exposure suits, all necessary details and requirements should be stipulated by the OGP Member.

These requirements should be reviewed and a decision made prior to commencement of operations.

Several studies and regulatory documents providing information on estimated survival time based on water temperatures versus survival time in varying kinds of dress can be used as background material for making decisions on use of survival suits. OGP Members should be able to access these documents through their respective Aviation Advisors.

9.13.4 Personal locator beacons

Where Search & Rescue services are not readily available, Companies may wish to consider the provision of Personal Locator Beacons (PLBs) to passengers. Ideally PLBs should be both 121.5 MHz and 406 MHz capable, so that the signal may be detected by the global SAR satellite system. Companies will need to confirm that the countries of operation are members of the SATSAR system.

9.13.5 Life jackets

On over water flights all aircrew and passengers will be provided with inflatable life jackets approved for aircraft use. They will have a survivor locator light and each life jacket must be stowed in a position easily accessible from the seat or berth of the person for whose use it is provided.

For offshore helicopter flights, these jackets will be fitted with constant wear covers, and will be worn at all times unless exposure suits are equipped with integral vests.

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Section 10 Contents

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10 Aircraft equipment standards

10.1 Introduction & equipment fit tables

The equipment specification of all aircraft that are offered for use needs to be examined in detail to ensure that sufficient equipment is available for the tasks on which the aircraft will be used. This equipment is normally specified in the technical specification in the Invitations to Tender and subsequently, in the contract. The matrices for helicopters and fixed-wing aircraft are at Appendix 7. In this section information will be provided to help in addressing what equipment should be on board contract aircraft.

Note 1: This listed equipment may in some cases be unserviceable and deferred (if allowed in approved Minimum Equipment Lists (MEL)). In these cases it should be determined what impact that will have on contracted operations and a limit for being out of service set if authorized by the MEL.

Note 2: Where ad-hoc aircraft are brought onto an operation for short term use, e.g. to replace temporarily unserviceable contract aircraft or to meet short term surge requirements, they should as far as possible meet the long-term contract aircraft equipment requirements unless otherwise authorised by OGP Member Company's Aviation Advisor.

When several aircraft of the same type are contracted, the cockpit layouts should be standardised wherever practically possible.

10.2 Minimum aircraft equipment – general

10.2.1 General description

Whilst regulatory authorities will not always require the carriage of the items of equipment described in the following sections in all aircraft, the requirements contained within this guide should be applied to aircraft engaged on service contracts to OGP Member Companies as detailed in Appendix 7.

10.2.2 Emergency Locator Transmitters (ELTs)

ELTs are to be carried on all aircraft, and in some areas, such as offshore UK, an automatic deployment capability (ADELT) is mandatory. Ideally, such ELTs should be located in an area where they can easily be deployed or alternatively best protected in the case of an accident, e.g. dinghy packs and crew life jackets.

If automatically deployed, features should include crash switches, immersion switches, and the unit should be buoyant. If portable, they should have integral and self-deployable aerials.

With their worldwide coverage and enhanced features ELTs with a satellite (406 MHz) signal transmission is recommended. See also paragraph 12.4.2

10.2.3 Underwater location beacons

An example of the type of equipment commonly used by western operators is the Dukane (DK 100) beacon. With a six-year service life, the DK 100 once activated will "transmit" for a minimum period of 28 days. It is a requirement for the aircraft operator to have immediate access to receiving equipment and that this equipment may be quickly dispatched to the accident site. See also paragraph 12.4.2.

10.2.4 Cockpit Voice Recorder (CVR)

In countries where airworthiness authorities do not establish a requirement for CVRs in low capacity aeroplanes and helicopters, OGP considers that fitment is highly desirable in those aircraft for which proven systems are available. In the case of dedicated contract aircraft type certificated with a seating capacity of 10 seats or more, the OGP recommends installation if not mandated by the local CAA. Ideally, the CVR should have a 2 hour recording time.

Where possible, an underwater location device should be associated with the CVR as detailed in paragraph 10.2.3.

10.2.5 Flight Data Recorder (FDR)

In countries where airworthiness authorities do not establish a requirement for fitment of an FDR, OGP considers that fitment is highly desirable in those aircraft for which proven systems are available.

10.2.6 High Intensity Strobe Lights (HISLs)

Conspicuity of aircraft is significantly increased by the fitment and use of HISLs or equivalent forward recognition/pulse lights. These, generally white strobe lights, as distinct from the routinely fitted red anti-collision beacons, provide particular benefit when operations take place under VFR in congested airspace. They are an added benefit when lookout has to be shared between general surveillance and a particular task. Because of their intensity, restrictions should be placed on their use on the ground.

It would not be practical to insist on this equipment in remote areas, where visibility is almost unlimited and traffic is of low density. However, in congested airspace they are considered essential particularly at the lower levels where vertical separation and visibility is often reduced and radar surveillance may be poor or non-existent.

Accordingly, OGP recommends that HISLs should be fitted for flights within Europe and where low level VFR flying takes place in and around built-up areas or on other high collision risk operations such as aerial pipeline patrols. Areas of uncertainty should be referred to OGP Members' aviation advisors.

10.2.7 Ground Proximity Warning Systems (GPWS)

Controlled flight into terrain (CFIT) is responsible for a large proportion of accidents and OGP considers the fitment of GPWS or equivalent Terrain Awareness Warning System (TAWS) as highly desirable in those aircraft for which proven systems are available. It is essential that clear instructions and procedural guidance for crews on their response to the various GPWS alerts be laid down in Operations Manuals and/or Standing Operating Procedures. EGPWS is an enhanced version of GPWS.

10.2.8 Airborne Collision Avoidance System (ACAS)

Airborne collision avoidance systems (ACAS) are commonly referred to as TCAS or Traffic Alert & Collision Avoidance Systems.

An airborne collision avoidance system should be considered for fitment to all new long-term OGP Member Company aircraft contracts, particularly in high density areas or where radar coverage is limited.

10.2.9 Flight data analysis

Flight data analysis is variously known as Operational Flight Data Monitoring (OFDM), in its application to fixed-wing aircraft, and Helicopter Operational Monitoring Programme (HOMP) in rotary wing application.

The system enables air operators to identify, quantify, assess and address operational risks. It is compatible with a pro-active Safety Management System where it can provide assurance that safety levels are being met or improved.

OGP has supported the development of the HOMP and recommends these system be considered on all new aircraft long-term contracts, where available for the aircraft model.

10.2.10 Survival kit

A survival kit, suitable for the area of operation, is to be carried on flights, which are planned to over fly hostile terrain, including offshore operations. See Appendix 7.

10.2.11 Hand-held microphones

In some regions, intercom systems are rarely found in aeroplanes, and the use of hand-held microphones is widespread. This practice is not recommended even in the case of two-crew aircraft and the use of headsets is preferred. All single-pilot operated aircraft should be equipped with headsets and control column mounted transmission switches.

10.2.12 Cargo & cargo restraint system

Whenever possible, cargo should be carried in a compartment approved for carriage of cargo, and where available for the aircraft model equipped with an independent fire and smoke monitoring and extinguishing system. Apart from the considerations for the handling of dangerous goods it is essential that all cargo be securely tied down in the aircraft. Each item of freight must be weighed and manifested accordingly, to enable the pilot to calculate performance requirements correctly and thus ensure adequate safety margins in the event of engine or other system failure.

Only authorised aviation personnel should secure and remove cargo and baggage. This is particularly important during times when the aeroplane or helicopter has engines/propellers/rotors running.

10.2.13 Materials used in upholstery & internal trim

Most countries require that prior to installation of interior a Burn Certificate must be provided with the material to be installed. Prior to contract this certificate or an officially recognized equivalent should be presented. This is especially important for older refurbished aircraft. It is therefore important that aircraft offered to OGP Member Companies are not modified merely to give an attractive appearance, but embody only approved fire-blocking materials in their construction.

10.2.14 First-Aid kits

Suitable and comprehensive First-Aid kits should be carried on all aircraft. See Appendix 7.

10.3 Helicopter equipment

10.3.1 Health & Usage Monitoring System (HUMS) & Vibration Health Monitoring (VHM) system guidelines

HUMS

Typically a HUMS incorporates basic vibration analysis using a VHM system which includes the equipment, techniques and/or procedures by which incipient failure or degradation of the helicopter rotor and rotor drive system components can be determined and is coupled with the aircraft flight data recorder for monitoring of other aircraft systems including propulsion.

VHM

A VHM system will normally monitor vibration data of the following, using a combination of spectrum analysis and advanced diagnostic (proprietary signal processing) techniques. This will also include a diagnostic capability for every component in the drive train:

- Engine and engine to main gearbox input drive shafts.
- Main gearbox shafts, gears and bearings.
- Accessory gears, shafts and bearings.
- Tail rotor drive shafts and hanger bearings.
- Intermediate and tail gearbox gears, shafts and bearings.
- Main and tail rotor track and balance.

Helicopter fit

The OGP recommended equipment fit for offshore helicopters detailed in Appendix 7 includes the availability of Vibration Health Monitoring (VHM) equipment and Engine Usage Monitoring Systems (UMS), if approved by the regulatory authority for the helicopter type.

Helicopters with 10 or More Seats: For helicopters type certificated for 10 seats or more it is recommended that a HUMS or, as minimum, VHM coupled with an engine UMS be fitted.

Helicopters with 9 or Less Seats: For helicopters type certificated for 9 seats or less it is recommended that a basic VHM of the drive line / turning components and an engine UMS be fitted.

Installation approval

Certification/approval of the fitment of HUMS/VHM by the local regulatory authority on a "no hazard/no credit" basis is acceptable.

Technical requirements

Operators of aircraft with vibration monitoring systems should establish a written list (MEL) of HUMS/VHM system components and identify those that are allowed to be inoperative and the time period, expressed in airframe hours.

In addition, where helicopters are operated in Performance Class 2, with exposure time during take-off and landing, or in Performance Class 3, it is recommended that the VHM should be augmented by a propulsion system Usage Monitoring System, where this is not already included in HUMS. Maintenance logs should provide details on inoperative vibration system components.

Daily assessments of HUMS/VHM and UMS downloads for warnings and trend analysis of the recorded data should be completed.

Inspection programmes should be written to require verification that vibration parameters are within tolerance at the beginning of a flying period, or appropriate maintenance actions are taken for excedances before flight.

References

A basic reference for HUMS is CAP 693 and FAA Advisory Circular AC 29-2C, Chg 1, Chap 3 AC 29 MG15, and for UMS is Appendix 1 to JAR Ops 3.517(a) - para (b) (5).

10.3.2 Life rafts

All life rafts should be equipped with an emergency radio/beacon.

All life rafts should be equipped with an approved offshore survival kit and be attached to the raft with a lanyard.

Exception: Single piloted helicopter survival kits may be located separately in the front cabin area to provide easy access by the pilot or front seat passenger.

Helicopters having a seat capacity for 10 or more passengers should have two life rafts; each should be certified for 50% overload to enable any one life raft to be used by all occupants.

Helicopters having a seat capacity for 9 or less passengers should have a minimum of one life raft certified to carry all occupants.

Where available by helicopter model, externally mounted life rafts are preferred over those internally mounted. The OGP recommends a helicopter installation whereby:

- Primary deployment is by single action from the normal crew positions
- Secondary deployment is from the passenger compartment with the cabin in an upright attitude, and
- Deployment is possible from outside the helicopter when in either an upright or inverted attitude. In this case the life raft is mounted externally on the helicopter. This is the preferred installation on long-term contracts.

10.3.3 Helicopter flotation gear

If helicopters are to be operated over the water, they should be capable of alighting on the surface of the water, either by virtue of inherent design features, e.g. boat hull, fixed floats, *etc.* or with the aid of flotation gear. It is a requirement that all offshore helicopters be fitted with flotation gear and it is recommended that this be automatically inflated on contact with water. For all new long-term contracts, automatically operated flotation gear is mandatory where a suitable modification is available for the helicopter type on contract.

10.3.4 Cabin push-out windows, emergency lighting & seating layout

As a result of a series of underwater egress trials conducted on representative offshore helicopters, OGP has identified additional requirements on all offshore helicopters:

- All apertures in passenger compartments suitable for the purpose of underwater escape shall be able to be opened in such an emergency. Push-out rubber mounted windows are the preferred standard where available for the aircraft model.
- Emergency exit marking systems (*ie* EXIS or HEEL path lighting) should be available on night flights and be automatically activated following the flooding of the cabin.
- Seat rows should be aligned with windows.

10.4 Fixed-wing equipment

See Appendix 7.

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Section 11 Contents

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11 Airbases

11.1 Definition

An Airbase is an airport or airstrip (unpaved) used for aeroplanes and or helicopters, and heliport (onshore) or helideck (offshore) only for use by helicopters.

11.2 Airbase design reference

ICAO Annex 14 titled Aerodromes, Volumes I & II, should be used as the basic reference documents in all new airbase design considerations, construction or major rework of existing airbases where no local guidance is available.

Additional details are listed in the helideck, heliport and airstrip sections below.

11.3 Airbase design reviews

In all cases a qualified OGP Member's Aviation Advisor should participate in all preliminary and critical design reviews for Company airbase construction or modification.

The airbase should in the design phase be planned to provide a clear area for a safe approach/departure path into prevailing winds.

All airbases and supporting facilities (fuel systems, hangars, fire suppression, passenger handling areas, *etc.*) should have periodic (minimum of annual) safety, operational and quality assurance reviews by appropriate regulatory authority or a qualified Aviation Advisor, and by the Operator, and records of such reviews and any remedial actions taken should be maintained. UK CAA CAP437 contains fuel system inspection guidelines.

11.4 Variances

Any variation to the above reference should be forwarded to OGP Member's Aviation Advisor for consideration as early as possible.

11.5 Weather monitoring systems

11.5.1 Wind indication systems

1) All airbases will be equipped with a wind indicating system that is clearly visible to the pilot and provides an indication of wind speed and direction.
2) Windsock systems are preferred over metal flag systems.
3) At any airbase where night operations may be conducted, the wind indicating system must be illuminated.
4) Helidecks shall be equipped with at least one windsock positioned so as to be visible for take-off and landings and shall be located outside the obstacle free zone.

11.5.2 Weather observation requirements for VFR operations to manned facilities

1) In addition to the wind indicating systems above, airports, airstrips and helidecks should be equipped with a weather station with the following:
   a) a temperature gauge; and
   b) a barometric gauge; and
   c) a means of providing cloud ceiling height and visibility (either with a trained weather observer or Automated Weather Observation System (AWOS); and

d) a means of relaying this information to the helicopter pilot.

2) Helideck weather stations should also have the following in addition to the items noted above:
   a) ability to report sea state which may be estimated visually or by using wave measurement equipment; and
   b) offshore floating facilities must also have a means of measuring helideck pitch, roll and heave.
3) For placement of weather observation stations, the following guidance from the FAA may be used where none is provided locally.
   a) one weather station for each airbase area encompassing an area of 10 miles in radius or less; or
   b) multiple weather stations for larger areas (two AWOS or one AWOS and one other weather station with a trained weather observer may cover field areas covering up to 60 x 80 miles).
   c) In any case, for AWOS only stations, there should be a backup capability of a trained observer for AWOS only systems.

11.5.3 Weather observation requirements for IFR/Night operations

For areas where IFR or night operations are to be conducted, the weather station must provide all the items in A-C above and in addition the following will be provided:

1) the weather observer should be certified via training in an approved weather observation course; and
2) consideration should be given to providing AWOS with certified weather capabilities; and
3) dew point should also be provided.

11.5.4 Weather equipment maintenance

Equipment should be calibrated annually or as per manufacturer recommendations. Equipment should be maintained in accordance with manufacturer's instructions.

11.6 Airbase rescue equipment

The provision of airbase rescue equipment, if required by local authority, should be provided in a crash box protecting all components from the elements.

Inspection schedules of the equipment should be formulated and periodic inspections documented.

Examples of the required equipment can be found in CAP 437 for helidecks, and ICAO Annex 14 for airports, airstrips, heliports and helidecks.

11.7 Airbase fire protection & equipment

All airbases should have a means of extinguishing a fire that is commensurate with the potential risk.

Inspection schedules of the equipment should be formulated in accordance with the manufacturer's recommendations or local regulations. Periodic inspections should be documented.

Examples of the required equipment can be found in CAP 437 for helidecks; ICAO Annex 14 for airports, airstrips, heliports and helidecks; and The National Fire Protection Association "NFPA 418 Standard for Heliports".

The following guidelines are presented as a minimum and are in accord with NFPA 418. Local regulations may differ. Airbases should comply with local regulatory requirements, but in absence of regulatory requirements, the following criteria apply:

a) Flammable liquid storage tanks should be located at least 16 meters from the takeoff and landing area.

b) Landing areas should be sloped to drain flammables and liquids away from passenger access and egress points.

c) No smoking is allowed on airbases, other than in designated locations.

d) Portable fire extinguishers may be used on unmanned airbases or areas when water is not available.

e) At least one portable fire extinguisher as specified in the following table should be provided for each landing area, parking area, and fuel storage area, and the equipment should be tagged with the last inspection date.

Minimum Ratings of Portable Fire Extinguishers for Heliports:

Category	Helicopter overall length, including both rotors	Minimum rating
H-1	Up to but not including 15.2 meters (50 feet)	4-A:80-B
H-2	From 15.2 meters up to, but not including 24.4 meters (50 - 80 feet)	10-A:120-B

f) Foam/Water Systems: For long term use/manned facilities a Water/Foam system is desirable that will provide fire protection to the landing/parking area. Industry tests indicate that 1% foam induction systems have frequent failures of finished foam concentrate levels, and 3% foam induction systems are preferred for new build or major rework.

– These systems should be tested in accordance with NFPA 11 or British Standard 5306 or local national equivalent.

– Tests should be completed on an annual basis with samples taken from the foam concentrate, produced (after nozzle finished) foam, and water.

– Copies of testing results will be maintained for review.

II.8 Non-directional beacons (NDB)

NDBs should have a periodic maintenance programme, which includes annual calibration for proper output based on the specific Manufacturer's published procedures.

All NDBs, whether onshore or offshore, should have aeronautical navigation frequencies that have been provided by the specific country of operations CAA or authorized communications agency. Frequencies provided from other sources are not recommended for air navigation purposes.

II.9 Helicopters & helidecks

11.9.1 General

ICAO Annex 14, Volume II, titled "Heliports" should be used in all design considerations, construction or major rework of existing heliports or offshore helidecks, if no local regulatory guidance exists.

11.9.2 Size – definition

As a minimum any heliport or helideck should be sufficient in size to accommodate the largest helicopter using the helideck or heliport for single helicopter operations.

The 'D' value, where 'D' is the largest overall dimension of the helicopter with the rotors turning, will define the maximum size of helicopter able to use the helideck.

The "D" dimension will normally be measured from the most forward position of the tip path plane of the main rotor to the most rearward position of the tip path plane of the tail rotor.

11.9.3 Helidecks

Design references

1) All new helidecks should conform to the standards of ICAO "Aerodromes" Annex 14, Vol II, if no local regulatory guidance exists, and should be designed to accommodate the largest helicopter anticipated for use during the life of the structure. For practical implementation guidelines and practices CAP 437, "Offshore Helicopter Landing Areas" and the ICAO Heliport Manual should be used.
2) Criteria for mobile offshore drilling unit (MODU) helidecks are contained in the International Maritime Organization's (IMO) Code for the Construction and Equipment of Mobile Offshore Drilling Units. These criteria may be applied to other mobile offshore units.
3) Shipboard helidecks such as tankers and seismic vessels should conform to the International Chamber of Shipping's (ICS) "Guide to Helicopter/Ship Operations."

Size

1) For all new-build helidecks
    a) New build helidecks shall conform to the minimum size recommended in ICAO Annex 14, unless the local guidance provides for variances.

1) Helidecks mounted on the bow of FPSOs may require larger than normal diameters, up to 1.5 D (D = overall length of the helicopter with rotors turning), due to pitch, roll, and heave considerations. Advice from the OGP Member's Aviation Advisor should be sought before completing design on FPSO helidecks.

Second helicopter operations to obstructed helidecks

Include in local helideck procedures and/or Operator's Operations Manual procedures to be followed when landing a second helicopter on a helideck that is normally only approved for one helicopter (first helicopter has a maintenance fault, *etc.*). Items to be considered include the following:

a) Determine if alternate means, vessel, *etc.* can fulfil requirements.
b) Operations must be daylight only and must be allowed by the Operator's Operations Manual.
c) Use smaller helicopter, if possible to fulfil requirements.
d) Minimum obstruction clearance during landing or take-off must not be less than the greater of ⅓rd rotor diameter or 4 meters. Any such obstructions must be located within the area swept by the 8 o'clock forward through to the 4 o'clock position of the landing helicopter as viewed from the flight deck.
e) The helicopter Captain has the final decision on whether or not to land on the obstructed deck.
f) Before any flight takes place, the Operator will request confirmation from the installation that the helideck is structurally capable of supporting the weights of both the incoming helicopter and the helicopter or other obstruction on the helideck.
g) Helicopter Operator and offshore manager shall discuss risks involved in the operation and reach agreement that the operation may be conducted safely when the applicable risk mitigation measures have been applied.

Operational hazard considerations

A number of hazards can exist at offshore facilities and the local helideck procedures manual or the Operator's Operations Manual should have written operational procedures for closing helidecks and have hazard warning systems for the hazards noted below. OGP Member Aviation Advisors can provide sample procedures if desired.

a) Crane – helicopter operational procedures.

b) Helicopter/tanker operation.
c) Helideck/heliport operational hazard warning(s)/procedure(s).
d) Perforating operations.
e) Gas venting.
f) Hydrogen sulphide gas (if applicable for the area).

Helideck Local Procedures Manual

OGP Members' operations with helidecks should have, for pilot use, a Local Procedures Manual detailing operational procedures, hazards, *etc.* for each helideck. These Manuals should include as a minimum the following: overhead and side views of the helideck, size/weight capability, markings, lighting (if installed), communications, weather capabilities, obstacles, turbulence issues, hazards, and any specific operational procedures. These often take the form of "approach" plates and, lacking other references, JAR Ops 3.220 with AMC 2 can be used.

HLO & HDA standards

UK Offshore Operators Association (UKOOA) publication "Guidelines for the Management of Offshore Helideck Operations" is a good source when considering requirements for management and operation of helidecks. This includes manning, competence and training of helideck personnel. Further guidance is available in the following documents:

a) UK CAA Publication - CAP 437
b) Offshore Petroleum Industry Training Organisation (OPITO) Training Manuals and Courses
c) Helicopter Safety Advisory Conference - Recommended Practice.

11.9.4 Heliports

Design reference

ICAO Annex 14, Volume II, Heliports, should be used in all design considerations, construction or major rework of existing heliports, where no other local guidance exists.

Rejected takeoff area

a) All heliports should have a rejected takeoff area or "Flyway" to allow for helicopter landing in the event of an aborted takeoff or return due to malfunction.
b) The length of a flyway will vary by model helicopter, its gross takeoff weight, and the prevailing density altitude. These performance parameters are published in the applicable helicopter flight manual.
c) Where possible, the rejected takeoff area should be paved or compacted surface that will sustain the weight of the helicopter in the event of a run on landing.

II.10 Airports & airstrips

11.10.1 Airstrips/remote runways

Remote runways/airstrips will be long enough to allow the aircraft to reach take-off decision speed (V1), abort, and remain on the runway.

Length, allowable slope of the airstrip, and other design criteria will be determined using aircraft performance data published by the aircraft manufacturer. If no performance data exists for the aircraft given the temperature and altitude of the airstrip, then a different aircraft model with suitable performance criteria should be selected.

Other dimensional and obstacle clearance dimensions should be determined using ICAO Annex 14, if no other local guidance exists.

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Section 12 Contents

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12 Emergency response planning

12.1 Introduction

Each OGP Member's site, operation or asset using aviation services should make provisions for aviation emergencies in their Emergency Response Plans (ERP), and communicate these plans to all relevant personnel. The ERP should be developed in co-operation with the aircraft operator providing services to ensure that in the event of an aviation emergency any adverse outcome is minimised.

12.2 Aircraft in the emergency response role

12.2.1 Operator responsibilities

Where aircraft are designated for emergency response standby, the aircraft and crew should remain within the prescribed area of operations to provide a response time deemed satisfactory by the OGP Member.

Any change in the state of readiness of the aircraft or supporting emergency response equipment should be reported to relevant OGP Member personnel immediately.

12.2.2 OGP Member responsibilities

The specific role and duties of all aircraft utilized in the event of an emergency should be documented in the OGP Member's site or operation specific ERP.

Particular attention should be made in clearly outlining communication procedures between aviation and the marine vessels and/or ground resources involved.

ERP's should be regularly reviewed and modified when affected by regulatory or operational requirement changes.

12.2.3 Planning considerations

Search & Rescue capabilities by both aircraft and vessels are significantly limited at night, and should be taken into account if late afternoon or night flights are undertaken.

The OGP Member's Aviation Advisor should be contacted regarding guidelines and suitable aircraft for night Search & Rescue flights. Appendix 12 also contains further information on the use of helicopters in a secondary Search & Rescue role.

12.3 Scenario based drills

12.3.1 General

Scenario based emergency drills with specific objectives should be conducted within 30 days of a new project start and annually, as a minimum, for ongoing operations.

The drill should involve the aviation resource and include pilots, support staff, aircraft, and be integrated with marine or land surface resources.

Exercises involving aviation aspects of the ERP should test field and offshore communications capabilities where applicable, as well as aviation coordination with ground and marine resources.

The types of exercises that can be planned (but not be limited to) include the following:

a) Fire – involving an aircraft, and/or heliport.
b) Missing, or overdue aircraft.
c) An aircraft forced landing, onshore and offshore.
d) Search & Rescue operation, use of emergency equipment to include Linked Raft Rescue System.
e) Helicopter winching exercises.

f) Oil and Fuel spill – air support and spray buckets.

g) Medical evacuation, including stretcher drills.

12.3.2 Planning & conducting emergency response drills

The planning for the safe conduct of drills should be documented and discussed with the aviation participants prior to the conduct of any exercise.

Any safety restraints as a result of night operations or restrictions due to weather should be documented in this plan.

Active participation from the Aircraft Operator is expected in the determination of the weather minimums for the conduct of the drills.

Areas that should be taken into account include visibility, wind speed, temperature limits and sea states.

To validate the integrity of the specific scenario drill, the exercises should be varied with regard to the time of day, and the day of the week. When applicable to the activities of the OGP Member's site, asset or operation, this should include after-hours operations and on weekends.

At the conclusion of each exercise the drill should be critically assessed and all personnel fully debriefed. All subsequent recommendations should be documented for follow-up action.

I2.4 Search & Rescue (SAR) services & equipment

12.4.1 General

Operators carrying OGP Member personnel should be equipped as necessary with SAR supportive equipment and be backed by an appropriate level of rescue service that can be directed to the operating area without delay. The Aviation Advisor can assist with determination of which equipment and services may be necessary. Factors to be considered include the following:

a) Environment of hostile versus non-hostile.

b) Anticipated survival time of occupants versus anticipated rescue time.

c) Local agency support.

d) SAR Support Equipment.

12.4.2 SAR supportive equipment

Automated flight tracking systems

Flight tracking systems that utilise GPS and satellite technology for aircraft flight following may be utilised when appropriate to the environment and operation being conducted.

Emergency Locator Transmitters (ELT), personal beacons/radios, Search & Rescue Transponders (SART), and sonar pingers

1) Recommended ELT. The use of TSO 126 emergency transmitters which utilize 406 MHz signalling and satellite coverage to pinpoint its location geographically on land or in water, if the aircraft is floating, and identifies the aircraft by tail number is preferred by the OGP. Each transmitter requires registration of the unit's owner and contact details and in the case of fixed aircraft installations the registration includes the aircraft tail number. Points to note with respect to TSO 126 ELTs are:
   a) The aircraft's country of registration needs to be registered with the COSPASS/SARSAT system before the aircraft can be registered.
   b) The 406 MHz transmitters are preferred over the older TSO 91 & 91a transmitters, which do not include aircraft identification.

c) The 406 MHz ELT, beacons or radios should only be used where countries have registered for the satellite support.

d) See also paragraph 10.2.2 for additional details

2) Personal locator beacons and emergency radios. Small hand-held personal emergency beacons are available, and some models offer both voice capability and 406Mhz capability. Voice capable personal emergency radios are preferred over non-voice. The OGP recommends that:

a) Pilots for all offshore helicopters, geophysical aircraft, and low flying survey or patrol aircraft carry a personal locator beacon, with voice capability in their flight clothing, vest or constant wear life jacket.

b) Pilots in all other categories, other than those listed above, are also encouraged to carry a personal locator beacon.

c) OGP Members with operations in remote areas or involved with offshore operations may consider providing personal locator beacons to passengers for carriage during flight with briefing instructions for use in the event of an emergency.

3) Life rafts – carriage of emergency beacons.

a) All life rafts should be equipped with an emergency beacon or radio that is waterproof (non-voice systems are acceptable).

b) The raft mounted emergency radios/beacons should be attached to the raft by a lanyard.

4) Offshore helicopters – fitment of sonar pingers and SART.

a) All offshore helicopters should have an underwater acoustic beacon (pinger) that transmits when submerged. See also paragraph 10.2.3 for additional details.

b) If equipped with a Cockpit Voice Recorder (CVR), the pinger should be attached to the CVR.

c) Portable Search & Rescue Transponders (SART) provide the ability for any aircraft or vessel equipped with radar to "home" into the beacon, and these devices should be considered for inclusion either in life raft or helicopter cabin.

Homing receivers

Three types of homing (direction finding) receivers are available to assist in locating missing aircraft or personnel transmitting on emergency frequencies.

1) Sonar Pinger homers are used for locating a submerged aircraft transmitting with a sonar pinger.

2) ELT and beacon homers are used for locating a downed aircraft on land or floating in water.

3) Radars on aircraft or vessels can be used to locate SARTs (see above).

If not available for either water or land in the country of operation, then these homing devices should be added as a contract specification or included in Company owned equipment.

Rescue hoists

The role of rescue hoists for Search & Rescue purposes in emergency response planning (ERP) should be carefully evaluated and a Risk Analysis completed by the OGP Member's Health, Safety & Environment (HSE) staff with the assistance of its Aviation Advisor.

When considering rescue hoisting as a secondary role for helicopters, consideration should be given to the overall ability of the operator to perform competently and to complete periodic training to support the hoisting role given the parameters established in the ERP. Such programmes for over water rescue should include training over open water without visual reference to land.

It may be more practicable to provide a linked life raft system as noted in paragraph 12.5.5 and Appendix 12, Section 5 rather than to provide a rescue hoist if the Risk Analysis supports this decision. Nonetheless, both are demanding tasks when conducted over open water and periodic training must be undertaken.

Warm-up clothing

Suitable clothing that rescued personnel can change into as soon as practicable after rescue, such as sweat suits or blankets should be located in a waterproof container with other rescue equipment.

12.5 Survival equipment

12.5.1 Survival kits

All aircraft should carry safety equipment and survival kits that, as a minimum, comply with local civil aviation authority or regulation.

When considered necessary, the Company may request additional equipment subject to the operating environment. The items contained in survival kits should be appropriate for the geographical location and climatic conditions; for example, offshore, arctic, jungle or desert.

The capacity of each survival kit should be proportionate to the number of persons carried in the aircraft.

Over-water operations require special considerations for safety and survival equipment such as life jackets, immersion suits and emergency rafts.

12.5.2 Life rafts

All life rafts should be equipped with an emergency radio/beacon.

All life rafts should be equipped with an approved offshore survival kit and be attached to the raft with a lanyard.

a) Exception - Single piloted helicopter survival kits may be located separately in the front cabin area to provide easy access by the pilot or front seat passenger.
b) See also paragraphs 10.3.2 and 12.4.2 for additional details.

The following life raft requirements are recommended:

a) Helicopters having a seat capacity for 10 or more passengers should have two life rafts; each should be certified for 50% overload to enable any one life raft to be used by all occupants.
b) Helicopters having a seat capacity for 9 or less passengers should have a minimum of one life raft certified to carry all occupants.
c) Where available by helicopter model, externally mounted life rafts are preferred over internally mounted.

12.5.3 Life jackets

Approved types

Only those life jackets that are manufactured to an aviation authority approved TSO and certificated for use by the regulatory authority should be used. The following points should be noted:

a) Permanently buoyant vests should not be worn or provided to occupants on aircraft flights because these types significantly hinder egress from a submerged helicopter or aeroplane. This is the same reason why life jackets should never be inflated until well outside of the helicopter or aeroplane cabin.
b) Where approved by local authority, life vests with crotch strap designs are preferred over those without.
c) Rebreather systems for life vests and/or exposure suits which are designed to provide additional time for underwater egress may be considered for use, but a suitable training programme will need to be established. These systems should have appropriate approval for use by the regulatory authority.

d) Some exposure suits do not have integral life vests and may lack adequate sustained floatation, and a separate life vest may need to be worn externally. A crotch strap may be necessary for adequate security of these separately worn vests. The manufacturers and regulatory authority should be consulted as necessary for clarification.

Constant wear life jackets

For operations where the vests are routinely worn, such as offshore helicopters, they should be covered with a durable fabric to reduce damage from constant handling. Life jackets manufactured to an approved TSO for constant wear life jackets are preferred.

Helicopters & float plane life jackets

a) For all helicopters and floatplanes over-water flights beyond gliding distance of land, the life jacket should be worn in a readiness condition.

b) Pilot life vests for offshore helicopters or remote areas should contain an emergency radio (See also paragraph 12.4.2)

Aeroplane Life Jackets

For single-engine aeroplanes, and multi-engine aeroplanes that cannot maintain altitude on one engine, conducting operations over water beyond gliding distance of land, life jackets should be worn by all occupants.

For all other aeroplane extended over water operations, life jackets will be available and readily accessible for use by passengers and crew in the event of a ditching.

Night flights – life jacket additional requirement

For night flights, life jackets will be equipped with an integral light.

12.5.4 Exposure suits for offshore helicopter & float plane flights

Decision to use exposure suits

Immersion suits certified for use by the regulatory authority should be provided to crews and passengers for helicopter over water operations in cold water hostile environments.

In the event that local regulatory controls do not address the issue of wearing exposure suits, all necessary details and requirements should be stipulated by the Company.

These requirements should be reviewed and a decision made prior to commencement of operations.

Several studies and regulatory documents providing information on estimated survival time based on water temperatures versus survival time in varying kinds of dress can be used as background material for making decisions on use of survival suits. These documents should be available from the OGP Member's Aviation Adviser.

Exposure suit considerations

1) A detailed risk analysis should be completed when determining if survival suits should be worn.

2) Factors that should be considered in the analysis for exposure suits should include:
   a) The availability and anticipated response time of Search & Rescue resources.
   b) Realistic assumptions on search and/or rescue time should include:
   c) Distance offshore.
   d) Worst case visibility conditions.
   e) Accuracy of aircraft navigation equipment.
   f) Worst case sea conditions.
   g) Time to hoist each occupant.
   h) Potential for in sea assistance of occupants.

i) Dropping of survival equipment. (see also sub-paragraph m below)
j) Estimated survival time for clothing being worn.
k) The worst case scenario in terms of the most unfavourable location of a ditched aircraft and longest mobilization times for aircraft or vessels should be used when detailing minimum response times.
l) Additional equipment and personnel factors such as, helicopter winching limitations, rescue helicopter capacity, crew expertise, guaranteed availability, and all-weather capabilities of the rescue aircraft/vessels need also to be considered
m) Determination by local management that occupants can be rescued within the prescribed survival time.
n) Compatibility of life vests and rebreathing systems with exposure suits.

3) The following practical problems should also be considered.
   a) In certain areas, prevailing sea currents may result in water temperatures being sufficiently cold to make use of survival suits prudent. But high ambient air temperatures, combined with low air circulation within the suit can cause debilitating fatigue in crew members and discomfort for passengers.
   b) In such circumstances, efforts may be better directed at improving rescue response (vehicles, vessels or aircraft systems), and search capabilities rather than introducing survival suits.

12.5.5 Linked raft rescue system

Description

It is recommended that OGP Members, for long-term operations in conjunction with the Operator, consider in their emergency response planning the use of a "Linked Raft Rescue System" as a part of the survival equipment in the event helicopter hoisting is not readily available or when the possibility exists that personnel may not be recovered from the water within anticipated in-sea survival times.

Systems are available that can be deployed from helicopters or suitably equipped fixed-wing aircraft.

The system consists of:

a) Two rafts are linked together with two fifty-meter lengths of buoyant nylon rope.
b) Two floating smoke canisters.
c) One knife for cutting the rope is necessary.
d) Leather gloves for deployment.
e) Positive intercom communications between the pilots and deployment person.

The rafts are air dropped up-wind from the rescue zone and drift in a semi-circular manner to surround those persons in the water.

The system assists in directing the person by means of the floatable rope to one of the two rafts.

The object is to secure personnel as quickly as possible into life rafts as a first step in the recovery process. Additional information on this equipment and procedures for its use is available from the Aviation Advisor.

Training

This system should only be used if the aircraft crew have been trained in the physical deployment of the system over water, at periodic intervals, with annual recommended.

The system should only be deployed from a dual piloted, twin-engine helicopter or suitably equipped aeroplane and with an individual trained in its deployment in the rear of the aircraft.

12.6 Emergency flights

12.6.1 Planning

Activities conducted in remote areas should, as part of an emergency response plan, have a clear set of instructions on arranging and obtaining emergency flights for technical, political, security or medical reasons.

12.6.2 Contingency aviation operators

If acceptable aircraft are not available in the country or region of activity, contingency arrangements should be made in advance with approved Operators specializing in emergency flights and medical evacuation operations.

I2.7 Overdue aircraft

An aircraft which fails to contact flight following at required time intervals, or fails to respond to radio contact, is considered overdue.

If any aircraft is reported overdue through the Flight Following facility, or other means, actions detailed in the Emergency Response Plan should be initiated. A check list sheet should be used from the first instance to ensure all appropriate actions are undertaken and to document all relevant information.

I2.8 Accident, incident, hazard & near miss reporting

Information concerning an aircraft involved in an accident, incident or near miss while under contract to the Company should be reported immediately to the Company aviation representative on location. Definitions and recommendations relating to accident, incident, hazard and near miss reporting are contained in Section 3 of this Guide.

In any event, the adherence to a detailed Emergency Response Plan will assist in providing clear and co-ordinated procedures to deal with all possible scenarios.

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13 Appendices

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Appendix 1 Risk assessment & risk reduction opportunity ranking

With all businesses driven to get the most possible value from each and every expenditure, investments in safety should be guided by risk assessment and a structured process to ensure that the funds available are spent on the things that will do the most good to improve safety. The following guidelines describe a structured process for assessing risk and for ranking risk reduction opportunities in a way to manage risks to a level as low as reasonably practicable (ALARP).

Risk is the product of potential consequence (e.g., fatalities, asset loss, environmental damage) and probability (frequency or likelihood). Risk assessment is the act of judging and classifying the potential consequences and the likelihood of hazardous events. Many companies use similar matrices to the one shown below to assess risk.

Consequence					**Increasing likelihood**				
					A	B	C	D	E
Severity	People	Assets	Environment	Reputation	Never heard of in E&P industry	Heard of in E&P industry	Incident has occurred in our company	Happens several times per year in our company	Happens several times per year in a location
0	No health effect/injury	No damage	No effect	No impact					
1	Slight health effect/injury	Slight damage	Slight effect	Slight impact					
2	Minor health effect/injury	Minor damage	Minor effect	Limited impact					
3	Major health effect/injury	Localised damage	Localised effect	Considerable impact					
4	PTD or 1 to 3 fatalities	Major damage	Major effect	National impact					
5	Multiple fatalities	Extensive damage	Massive effect	International impact					

The vertical axis displays the potential consequence of an incident and the horizontal axis displays the likelihood of this consequence. The combination of potential consequence and likelihood defines the risk classification.

Potential Consequence is divided into levels running from '0' to '5', indicating increasing severity. A potential consequence should be reasonable and credible; something that could have developed upon the release of the hazard. It is very important to judge the potential consequences in addition to the actual ones. These are defined as the consequences that could have resulted from the released hazard if circumstances had been less favourable.

The overall potential consequence of an incident is established for four different scenarios. These are **People, Assets, Environment** & **Reputation**. A combination of these is possible, but the highest potential consequence is normally used for further analysis. For example, if an incident could have caused a single fatality (People 4) and minor damage to an aircraft (Assets 2), the potential Level 4 consequence is then used in the incident classification (e.g., Low Risk, Medium Risk, High Risk).

The following tables guide how to set severity levels one through five for potential consequences:

People consequences

The following table further defines the consequences to people:

	Effect	Description
0	None	No injury or damage to health
1	Slight	Slight injury or health effects (including first aid case and medical treatment case) - not affecting work performance or causing disability.
2	Minor	Minor injury or health effects (Lost Time Injury) – affecting work performance, such as restriction to activities (Restricted Work Case) or a need to take time off to recover (Lost Workdays Case). Limited health effects which are reversible, e.g. skin irritation, food poisoning.
3	Localized	Major injury or health effects (including Permanent Partial Disability & Occupational Illnesses) – affecting work performance in the longer term, such as a prolonged absence from work, irreversible health damage without loss of life, e.g. noise-induced hearing loss, chronic back injuries.
4	Major	Permanent Total Disability or one to three fatalities – from an accident or occupational illness. Irreversible health damage with serious disability or death, e.g. corrosive burns, heat-stroke, cancer (small population exposed).
5	Massive	Multiple fatalities – From an accident or occupational illness e.g. chemical asphyxiation or cancer (large population exposed).

Asset consequences

The following table further defines the consequences to assets:

	Effect	Description
0	None	Zero damage
1	Slight	Slight damage - costs <US$10,000
2	Minor	Minor damage - costs <US$100,000
3	Localized	Local damage - costs ≤US$500,000
4	Major	Major damage - costs ≤US$10,000,000
5	Massive	Extensive damage - costs > US$10,000,000

Environmental effect

The following table further defines the consequences to the Environment:

	Effect	Description	
		Offshore	Onshore
0	None	Zero	Zero
1	Slight	< 42 gallons (159 litres) fuel or oil spilled.	< 210 gallons (795 litres) fuel or oil spilled.
2	Minor	42-210 gallons (159 - 795 litres) fuel or oil spilled.	≥ 210 gallons (795 litres) fuel or oil spilled.
3	Localized	≥ 210 gallons of fuel or oil spilled, or spill response required by regulator.	> 2,100 gallons (7,949 litres) fuel or oil spilled, environmental fine; spill response required by regulator, or 210 gallons (795 litres) spilled to surface waters.
4	Major	> 4,200 gallons (15,897 litres) of fuel or oil spilled. Spill response required.	Significant deployment of equipment or major environmental clean-up response required.
5	Massive	Severe environmental damage or severe nuisance over large area, and a major economic loss.	

Impact on reputation

The following table further defines the consequences to Reputation:

	Effect	Description
0	None	No impact - no public awareness.
1	Slight	Slight impact - public awareness may exist, but there is no public concern.
2	Minor	Limited impact - some local public concern. Some local media and/or local political attention with potentially adverse aspects for company operations.
3	Localized	Considerable impact - regional public concern. Extensive averse attention in local media. Slight national media and/or local/ regional political attention. Adverse stance of local government and/or action groups.
4	Major	National impact - national public concern. Extensive adverse attention in the national media. Regional/national policies with potentially restrictive measures and/or grant of licenses. Mobilization of action groups.
5	Massive	International impact - international public attention. Extensive adverse attention in international media. National/international policies with potentially severe impact on access to new areas, grants of licenses and/or tax legislation.

Likelihood is also divided into five levels, which run from, *'Never heard of in ..... industry'* to *'Happens several times per year in a location.'* The likelihood is estimated on the basis of historical evidence or experience. In other words: 'Has the potential consequence actually resulted from a similar incident within the aviation industry, the company or at the location?' Actual consequences have, by definition, occurred and hence fall on Likelihood C, D, or E on the risk matrix for the actual consequence level.

Note: this should not be confused with the likelihood that the hazard is released – we are concerned with the likelihood of the potential consequences resulting from the incident in question.

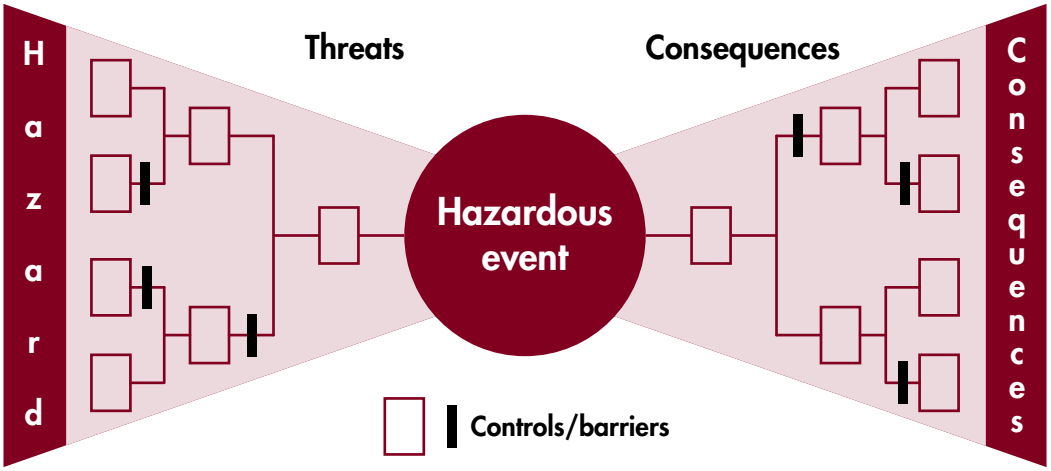
Example:

A helicopter rollover may be assessed as having a potential consequence of fatalities (severity level 4 or 5). The likelihood used for the risk assessment is that of a fatality resulting from the rollover, not the rollover itself. In other words, the key question is, 'how often are people killed or major damages caused by helicopter rollovers?' Not, 'could people be killed in a helicopter rollover?' Nor, 'how often do helicopters roll over?'

There is no specific time limit for when accidents occurred. The guiding rule is to count all accidents that have occurred using current barriers or controls; i.e., current technology and processes. Accidents that occurred before a significant change in technology or process may be ignored, if the current technology and process would likely have prevented them.

Risk management

The industry consensus is that risks assessed as 'High' on this matrix demand actions to reduce the risk. Many companies use a structured approach to ensure that the actions taken to reduce risks to a tolerable level are indeed adequate. The use of a 'bow-tie' in such a structured approach is an industry best practice. The figure below gives a graphic depiction of the 'bow-tie' concept.



Bow ties should be developed for all High Risk hazards. In aviation, two generic hazardous events that should normally be addressed with a bow tie are release of an unairworthy aircraft and deviation from intended safe flight path. A bow tie should concisely document the barriers and controls in place to prevent the release of a hazard, and the recovery measures in place to minimize the consequences should the hazard be released. Cross references should be provided to link the reader to any other documents that define processes and procedures used to ensure the effectiveness of these barriers, controls, and recovery measures. The figure below suggests how many independent and effective measures should be in place for High, Medium, and Low Risk hazards.

Risk acceptance criteria

Control/Barrier	High Risk (Intolerable)	Medium Risk (Incorporate Risk Reduction Measures)	Low Risk (Manage for Continuous Improvement)
Threat	Minimum of 3 independent, effective controls/barriers to be in place for each threat	Minimum of 2 independent effective controls/barriers for each threat	Minimum of 1 effective control/ barrier for each threat
Consequence Recovery	Minimum of 3 independent, effective recovery measures for each consequence	Minimum of 2 independent, effective recovery measures for each consequence	Minimum of 1 effective recovery measure for each consequence
Escalation	Minimum of 2 independent effective controls/barriers for each escalation factor	Minimum of 1 effective control/ barrier for each escalation factor	Minimum of 1 effective control/ barrier for each escalation factor

The most important word in the above risk acceptance criteria is 'effective.' Effectiveness should be based on demonstrated performance. Where barriers and controls depend on human actions, they should be complemented by training and competence assurance processes.

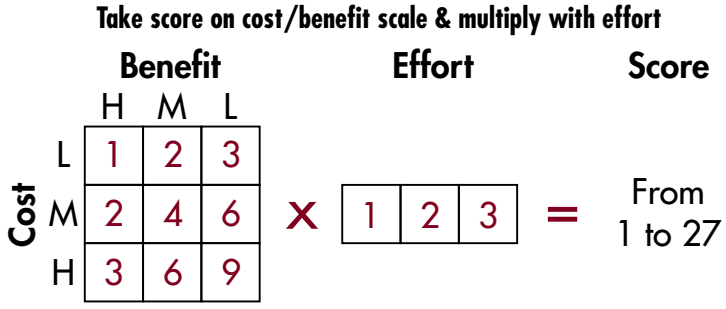
Bow ties not only assist in proactively establishing the barriers, controls, and recovery measures necessary to manage risks, they offer a frame of reference for understanding how hazardous events (incidents and accidents) occur and for refining the barriers, controls, and recovery measures to prevent recurrence. Used in this way, bow ties can be continuously improved with experience.

Several points should be considered in evaluating opportunities to reduce risks including, codes and standards, best practices, expert judgment, risk based analysis (e.g., quantitative risk assessment), company values, and societal values. The UKOOA publication, *Industry Guidelines on a Framework for Risk Related Decision Support* gives an excellent description of how these factors should be considered in various decision contexts.

ISO 17776:2000 *Petroleum and Natural Gas Industries – Offshore Production Installations – Guidelines on Tools and Techniques for Hazard Identification and Risk Assessment* is also a useful industry specific reference document.

In addition to these guidelines, to ensure that money is spent where it will do the most good when faced with multiple risk reduction opportunities and insufficient funds to do them all, the opportunities should be ranked according to the benefit, cost, and effort required to implement.

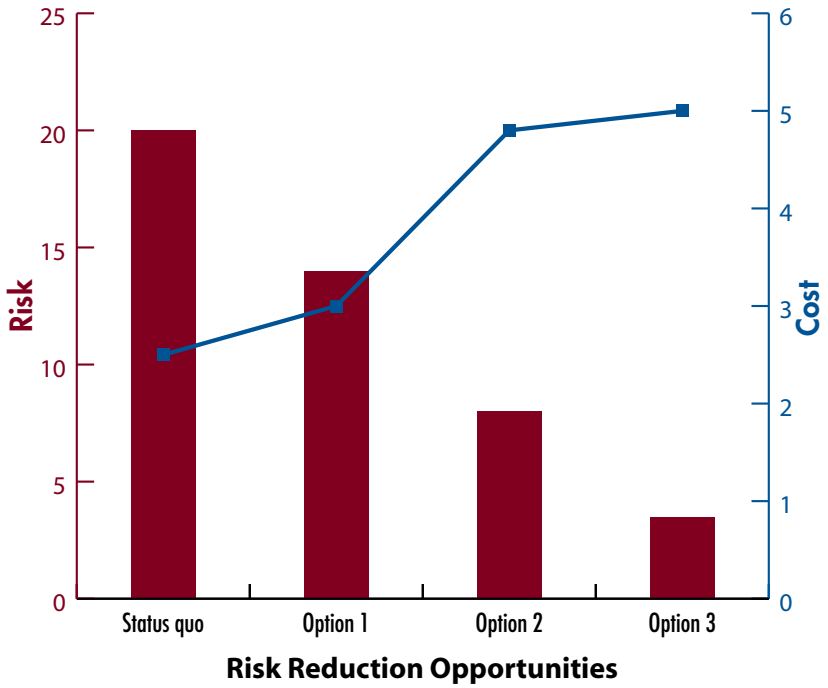
The figure below depicts the process whereby benefit, cost, and effort estimates produce a ranking between 1 and 27, with 1 being the most beneficial, least expensive and most easily implemented opportunity.



Benefit, cost, and effort scores are given values of 1, 2, or 3 based on objective and logical criteria. For example, costs of less than $50,000 might be assigned a 1, costs between $50,000 and $100,000 a 2, and costs over $100,000 assigned a 3. The actual values should be set to make rational distinctions between the least and most expensive risk reduction opportunities. The same logic should be used to assign values of 1, 2, or 3 for the benefit and the effort associated with each opportunity. The final ranking number is the product of the benefit, cost, and effort values. An opportunity with high benefit, low cost, and low effort values will yield a ranking number of 1. An opportunity with low benefit, high cost, and high effort values will yield a ranking number 27.

While the above described process helps to rank risk reduction opportunities, it is not intended to override the judgements based on UKOOA's *Industry Guidelines on a Framework for Risk Related Decision Support*, which might dictate that all the risk reduction opportunities be employed. When on the other hand, it is not clear where to draw the line on the rank-ordered list of risk reduction opportunities, a plot like the one shown below can produce informed and healthy debate.

Risk Mitigation



The ultimate test in the evaluation of risk reduction opportunities is the 'red face test'. If there was an accident caused by the lack of a risk reduction measure that you or your company chose not to employ, could you and your company's senior management stand before the press or a court of law and explain your choices without having a red face from embarrassment?

Note that quantifying the financial losses likely to result from the lack of a safety feature and comparing that to the cost of the safety feature is highly discouraged. Ford Motor Company once did such an analysis and predicted that the cost of the deaths likely to result from fuel tank fires after rear-end collisions was less than the cost of the putting rubber bladders in the fuel tanks of its Pinto car model to prevent fuel release after rear-end collisions. In one class-action lawsuit alone, Ford was forced to pay over $1 billion in damages. There could be great liability consequences for any company that knowingly and wilfully fails to take affordable safety measures that have proven effectiveness.

The most defensible process in making decisions about risk reduction opportunities appears to be the ALARP process, whereby a company should keep spending to improve safety until the spending necessary becomes disproportionate to the safety benefit gained. Of course, the ALARP process still poses the dilemma of deciding what constitutes 'disproportionate.' Fortunately, the risk reduc-

tion opportunities presented by the best practices incorporated in these guidelines clearly produce greater proportions of safety benefit than their cost.

Appendix 2 Example of aviation safety management systems - aviation safety case

The following requirements are provided as an example of an approach used by some OGP Members to promote the development of robust Safety Management Systems amongst its airborne contractors.

	Extent and Nature of OGP Member Contract	OGP Member Accredited Air Transport Operators*	Approved Operator (non-accredited)
1	All Offshore Operations any duration (except Pipeline Inspection); OR All Ops >1 year duration; AND More than 50 hrs per month exposure; OR High Risk operations any duration	Corporate Safety Management System (SMS)	Corporate SMS Exceptionally, contract may be awarded subject to a corporate SMS acceptable to OGP Member being implemented within 1 year (or as specified) or under an alliance with a OGP Member Accredited ATO and in accordance with that operator's SMS.
		Operation Specific Safety Case	Operation Specific Safety Case Where, exceptionally, an acceptable corporate SMS has not been implemented an enhanced Safety Case will be required. Exceptionally, contract may be awarded subject to the operation being conducted under an alliance with a OGP Member Accredited ATO and in accordance with that operator's SMS and Safety Case rules.
2	All Ops >1 year duration; AND Less than 50 hrs per month exposure	Corporate Safety Management System (SMS)	Corporate SMS Exceptionally, contract may be awarded subject to a corporate SMS acceptable to OGP Member being implemented within 1 year (or as specified) or under an alliance with a OGP Member Accredited ATO and in accordance with that operator's SMS.
		Operation Specific Safety Case	Operation Specific Safety Exposition Where, exceptionally, an acceptable corporate SMS has not been implemented an enhanced Safety Case will be required. Exceptionally, contract may be awarded subject to the operation being conducted under an alliance with a OGP Member Accredited ATO and in accordance with that operator's SMS and Safety Case rules.
3	Other Ops <1 year duration; AND Less than 50 hrs per month AND Low Risk Operations	Corporate Safety Management System (SMS)	Corporate SMS (Optional) Preference would normally be given to those operators having an acceptable corporate SMS.
		Operation Specific Safety Case	Operation Specific Safety Exposition (Not Required, but recommended).
4	Ad-Hoc/Occasional Use (No Standing Contract) AND Low Risk	Corporate SMS	Corporate Safety Policy
		Documented hazard assessment	Documented hazard assessment (Not Required, but recommended).
5	All Seismic & Airborne Geophysical Survey Operations any duration	Corporate Safety Management System (SMS)	Corporate SMS (Optional) Preference would normally be given to those operators having an acceptable corporate SMS
		Operation Specific Safety Case	Must have completed and documented an IAGSA Risk Assessment for review by the Aviation Adviser. Operation Specific Safety Exposition (Not Required, but recommended).

	Extent and Nature of OGP Member Contract	OGP Member Accredited Air Transport Operators*	Approved Operator (non-accredited)
6	Pipeline Inspection (no pax); AND More than 50 hrs per month exposure	Corporate Safety Management System (SMS)	Corporate SMS (Optional) Preference would normally be given to those operators having an acceptable corporate SMS
		Operation Specific Safety Case	Operation Specific Safety Exposition
7	Pipeline Inspection (no pax); AND Less than 50 hrs per month exposure	Corporate SMS	Corporate Safety Policy
		Documented hazard assessment	Documented hazard assessment (Not Required, but recommended).
8	Business Jet; AND On contract (recommended if >120 hrs per year, or 3 months)	Corporate Safety Management System (SMS)	Corporate SMS (Optional) Preference would normally be given to those operators having an acceptable corporate SMS Corporate Safety Policy meeting ISBAO requirements
		Operation Specific Safety Case	Operation Specific Safety Exposition (Not Required, but recommended). Documented hazard assessment meeting ISBAO requirements
9	Business Jet; AND Less than 30 hrs per month exposure	ISBAO Corporate SMS Requirements	Corporate Safety Policy meeting ISBAO requirements
		Documented hazard assessment meeting ISBAO requirements	Documented hazard assessment meeting ISBAO requirements

**Aircraft operators that have been accredited by the OGP Member as having a systematic corporate Health, Safety and Environment Management System designed to ensure compliance with the law and to achieve continuous performance improvement and closely aligned with the OGP Member's own HSE-MS*

Appendix 3 Duties & responsibilities of the Air Operations Supervisor (AOS)

The person appointed as the Air Operations Supervisor (AOS) may be tasked to:

a) Monitor the policy set in place by the OGP Member for the utilisation of aircraft; ensuring that only those operators approved by the Aviation Advisor staff are used and any conditions set out in the Operator's contract or Operations Manual are followed.

b) Maintain contact with those dealing with flight bookings, to ensure staff authorized to travel are only booked to travel.

c) Maintain records of all flights including details of:

   i) Sectors flown.

   ii) Numbers of passengers and/or weight of freight by sector.

   iii) Flying hours.

   iv) Aircraft availability (delays and the causes).

   v) Incidents and accidents.

d) Verify that all passengers are appropriately authorised to travel on the flight.

e) Confirm the numbers of Senior Executives or key personnel carried on a single flight fall within the OGP Member's guidelines

a) Make periodic visits to the Operator to verify operations are being performed in accordance with applicable regulations, Operations/Maintenance Manuals, OGP Member's aviation requirements, and contract language. Follow up outstanding audit recommendations to confirm action on compliance and advise the Aviation Advisor staff as necessary.

b) Ensure all aircraft accidents and incidents that occur involving aircraft operated for the OGP Member are fully reported and copied to the Aviation Advisory staff. Investigate, as far as possible, the circumstances of aircraft accidents and incidents involving third parties, and also copy to Aviation Advisor staff.

c) Take prevailing weather conditions in the area of operation into consideration when planning flights. Ensure the operator and aircraft customer have weighed adverse weather conditions and other factors against the importance of completing the flight, and the appropriate level of authorisation has been obtained.

d) Closely monitor the utilisation of pilots to ensure that only those currently approved and within crew/duty time limits are assigned to flights.

e) Track the status of Navigation Aids, weather instruments, fuel systems, and other support equipment.

f) Where airfield/airstrip(s), heliport(s), or helideck(s) are provided, additional responsibilities may include:

   i) Air-ground communication.

   ii) Fire/rescue support.

   iii) Provision of fuel.

   iv) Airfield/airstrip/heliport management/preparation.

   v) Passenger check in/out.

   vi) Raising manifests/weighing passengers and freight.

   vii) Control of security.

   viii) Organisation of Customs/immigration as required.

   In these cases the Aviation Advisor should be consulted to assist in developing the required support, based on the specific task, locality and situation.

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Appendix 4 Contents

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Appendix 4
Training courses – air operations supervisor

A4.1 Introduction

The Training requirements of a person nominated to the position of Aviation Operations Supervisor (AOS) will depend upon his experience and aviation technical ability, and the nature of the air transport requirement.

Where there is a sizeable air transport commitment, involving a large sole-use contract, supervising airfield or helideck activities or where the task is either complex or the exposure is assessed to be high, then a formal and structured period of training is recommended before taking up the post. Experience has shown that it is preferable for the OGP Member's Aviation Advisor to supervise this training.

This Appendix provides examples of the type of relevant training available, both generic and specialist.

A4.2 Advisory familiarisation & training

An AOS can be appointed from several sources. Whether the nominee is employed within the OGP Member's aviation staff, or from an outside source, the following areas should be addressed if necessary for the position and if not already provided in the person's previous experience:

- Managing HSE in the business.
- Contract management.
- Negotiating skills.
- Pilots may be required to do a short familiarisation or refresher course on the contract aircraft type.
- Engineers may need to undertake an airworthiness or quality assurance course.
- Other specialist courses:
  - Fire-fighting.
  - HLO training.
  - Refuelling.
  - Aircraft performance.
  - Seismic operations.
  - Computer training.

Where responsibility for aviation is a short-term requirement, little training may be required other than training in areas such as despatching and refuelling, provided that:

a) the responsible person has previous relevant experience; and
b) the OGP Member's Aviation Advisor is fully involved in the setting-up of the operation to ensure that the appropriate procedures and infrastructure are in place.

Each situation must be treated on its merits, recognising that thorough preparation and appropriate training will enhance safety and efficiency.

A4.3 Flight safety & aircraft accident investigation courses

Whilst not normally appropriate for an AOS, these courses are run by various institutions in the US and UK, e.g. University of Southern California and Cranfield University.

A4.4 UK airworthiness course

These three-week courses are run by the UK CAA and are designed to familiarise attendees with the concepts of airworthiness control from both the technical and procedural viewpoints. This course is for people appointed in a position where airworthiness aspects may be an issue.

A4.5 Safety management system

Industry has developed Safety Management Systems geared to the special needs of the Air Transport industry by applying the same principles as used for other activities in oil and gas industry. The Aviation Operations Supervisor should be able to brief and to help facilitate the introduction of the system with the contractor.

A4.6 Crew resource management

With emphasis being placed on human factors as the most prevalent ingredient of flying accidents, considerable effort is being placed on Crew-Resource Management training. Whereas it was introduced primarily for flight-deck crews, the principle is being extended to embrace cabin crews, engineers, dispatchers, management staff, *etc*. These courses may be available through the major airlines or training organisations. They typically last two days and provide a good insight into human factors issues.

A4.7 Familiarisation/refresher/conversion flying training

This training, which includes simulator training, can be arranged with approved contractors through the Aviation Advisor.

A4.8 Role experience

A good introduction for a new AOS is a short attachment to the OGP Member's aviation department for familiarisation with the services available, methods of audit and the setting of standards. This also provides an excellent opportunity to fill any gaps in knowledge, to view air supervision in practice in an established OGP Member's business unit, to undertake some flying and to tie together preparatory training in a co-ordinated manner.

A4.9 Basic fire course

Aircraft-specific fire-fighting courses are regionally available.

A4.10 Helicopter fire course

This is a follow-up course to the basic course and deals with the helideck requirement. This is typically a 2-day course.

A4.11 HLO training course

HLO training courses are provided regionally by a number of organisations; however training should be compliant with OPITO requirements and is best followed up by an attachment to an offshore facility to gain familiarity with HLO practice.

A4.12 Fuel quality course

Where the aircraft operator or the AOS has responsibility for the fuel supplied, it is essential that there is a basic understanding of aviation fuel quality control. Courses are available regionally.

A4.13 Seismic course

Details are contained in Appendix 8 of this guide. ***(From September 2007.)***

A4.14 Quality assurance course

The quality assurance standard ISO 9000 and its sister application in aviation (JAR-145 and JAR-OPS) need to be understood if the AOS is supervising contractors who claim to abide by this standard.

A4.15 Weather observer course

At remote onshore and offshore sites an OGP Member may consider certified weather observer training for personnel associated with air operations. Accurate weather observations by an appropriately certified observer can be used by the government or regional meteorological agency in generating aviation weather forecasts for the site as well as providing up to date weather information to inbound aircraft. Training is available from government meteorological agencies and private training organisations.

On completion of training the individual should be certified to provide weather observations acceptable for aviation purposes.

A4.16 Dangerous goods course

Dangerous goods courses are aimed to enable the individual to:

a) have a thorough understanding of dangerous goods regulations;
b) be able to correctly prepare a consignment of dangerous goods for air transport; and
c) know how to meet all the applicable requirements for classifying, packing, marking, labelling and documenting dangerous goods.

Courses are available regionally and the aviation advisor's advice should be sought on the most appropriate for the task.

Appendix 5 Contents

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Appendix 5A Experience & qualification levels

	Airplanes			Helicopters		
	Over 5,700kgs CTOM[1,2] & all jets	Turbo prop less than 5,700kgs CTOM	Piston engined less than 5,700kgs CTOM	Multi-engine over 5,700kgs CTOM	Multi-engine under 5,700kgs CTOM	Single engine under 5,700kgs CTOM
Aircraft commander qualifications						
Licences	ATPL	ATPL	CPL	ATPL(H)	ATPL(H)	CPL(H)
Type rating on contract aircraft	Current	Current	Current	Current	Current	Current
Instrument rating on contract aircraft[3]	Current	Current	Current[4]	Current	Current	Current[4]
Experience not less than						
Total hours	4,000[8]	3,000	1,500	3,000[8]	2,000	1,500
Total hours in command[5]	2,500	1,500	1,000	1,500	1,000	1,000
Total hours in command – multi-eng[5,6]	2,000	1,200	750	1,200	500[9]	
Total hours in similar acft complexity[5,6]	500	500		500	500[9]	
Total hours command on contract type[9]	100	100	100	100	100	100
Co-pilot qualifications						
Licenses	CPL	CPL	CPL	CPL(H)	CPL(H)	CPL(H)[7]
Instrument rating on contract aircraft[3]	Current	Current	Current[4]	Current	Current	Current[4]
Type rating on contract aircraft	Current	Current	Current	Current	Current	Current
Experience not less than						
Total Hours	1,000	500	500	500	500	500
Total hours on multi - engine aircraft[5]	500	250	250	500	250	
Total hours in command of multi-eng aircraft[4, 6]	100					
Total hours in command[5]	100	100	100	100	100	
Total hours on contract type[5,9]	50	50	50	50	50	50

Notes:

1 Maximum Certified Take-off Mass.
2 The requirements for Turboprop below 5700kg also apply to the following types that have a CTOM above 5700kg: King Air 300, Fairchild Metro III/23, SC-7 Skyvan, Let 410/420, AN 28, Skytruck 28 & Dornier 228 series aircraft.
3 Instrument ratings are required to be tested at periods not exceeding 13 months. [Instrument base checks should be at 6 monthly intervals].
4 Requirement for Instrument Rating depends on role or task. However, in all cases, proven and current instrument competence (i.e. Inadvertent IFR recovery training) is required.
5 These Hours to be fully on either aeroplanes or helicopters as appropriate. Up to 10% may be achieved in a flight simulator approved for the purpose by the regulatory authority. For Jets, 50% should be in Jet Command
6 For In Command Under Supervision multi-engine requirements see Section 8, paragraph 8.1.6
7 It is unlikely that a co-pilot will be required.
8 Total hours may be reduced by 1000hrs when total hours in similar aircraft complexity exceeds 1000hrs and no dispensation has been granted in the other Aircraft Commander Qualifications.
9 For all aircraft types, dispensation can be given for Total hours in command on contract type, when a pilot has completed an Aircraft Type Conversion course, based on the guidelines at Appendix 5C and accepted by the OGP Member Company. For Helicopters under 3175kgs dispensation can also be given for Aircraft Commander Total hours in command multi engine and Total hours in similar aircraft complexity when a pilot has completed an Aircraft Type Conversion course, based on the guidelines at Appendix 5C and accepted by the OGP Member Company.

	Airplanes			Helicopters		
	Over 5,700kgs CTOM & all jets	Turbo prop less than 5,700kgs CTOM	Piston engined less than 5,700kgs CTOM	Multi-engine over 5,700kgs CTOM	Multi-engine under 5,700kgs CTOM	Single engine under 5,700kgs CTOM
Both aircraft commander & co-pilot qualifications						
Total Hours Previous 90 days[11]	50 hours in 90 days, 10 in Type Aircraft					
Medical Certificate appropriate for License	Current for ALL					
Night Recency Previous 90 days	3 cycles[12]					N/A
CRM or ADM, initial/refresher[13]	Annual					
Dangerous Goods Awareness	Every 2 years[15]					
Experience in the Topographical area and in the Type of Operations Specified	One year experience in areas similar to that specified in the contract (e.g. Arctic, offshore, mountain, desert, jungle or international operations)					
Helicopter Linked Life Raft Systems				Annual		
Hoist, within 12 month period[14]				3 Cycles		
Helicopter Hook, within 12 month period[14]				3 Cycles		
Helicopter Underwater Escape Training (HUET)	Every 4 Years (All crew members operating offshore)					
Accident & Violation Record	2 Years Accident Free for Human Error Causes, subject to review by the OGP Member Company					
Flight Engineers[10]						
Licence	2nd Class Licence			2nd Class Licence		
Total flight hours	2,000			2,000		
Navigators[10]						
Licence	1st Class Licence			1st Class Licence		
Total flight hours	2,000			2,000		
Minimum navigator hours	1,000			1,000		

Notes:

10 Flight Engineer and Navigator experience requirements are applicable to all Former Soviet Union aircraft when flown in or outside the Russian Federation (RF).

11 When 50 hours in previous 90 days is not met, a non-revenue check flight by a qualified company check pilot is to occur.

12 One Night Cycle consists of a night take-off and landing. For offshore helicopter operations, the cycles are to be conducted to an offshore installation. Night operations require two IFR pilots, IFR multi-engine aircraft and IFR procedures. Night operations in single engine aircraft are not to be conducted.

13 Cockpit Resource Management (CRM), or for single pilot aircraft Aeronautical Decision Making (ADM). Refresher can be short block of ground instruction and part of the annual route check.

14 If equipped for Hoisting, one cycle consists of one complete winch (out/in) or for External Loads (Hook) one load pickup and reposition.

15 Every two years or in accordance with local regulatory requirements.

16 This recognizes that multi-engine hours are accumulated on gas turbine powered helicopters

17 Crew operating airplanes on long term contract operations with pressurized hulls should attend a one-time hypoxia course.

Pilot relevant role experience

Aircraft Commander Experience Requirements:

Aeroplanes	Helicopters	
Where specialist activities are involved, such as airborne pollution control, top dressing, aeromagnetic surveys, then advice on specialist experience requirements should be sought from a qualified Aviation Adviser.	Land Seismic Operations	See OGP 351
	Winching	A formal and recorded training scheme must have been undertaken which must include 10 hours of dedicated winching operation sorties (50 hrs where an exclusive SAR Winch Ops contract is in place) and be qualified under offshore or land seismic operations as appropriate as above. Recurrent training requirements are 3 winch rescue ops every 90 days. See Appendix 14 and 17
	Aeromagnetic and Geophysical Survey Operations	See IAGSA Recommended Practices, Appendix 15
	Offshore Spraying/Pollution Control	Prior offshore experience. Details in each case to be agreed with a qualified Aviation Adviser
	Recent Role Experience	For all the above role requirements recent experience is considered essential and pilots who have not operated under any of the relevant categories for periods in excess of a year will require refresher training [more frequent in the case of winching]. Advice should be sought from a qualified Aviation Adviser in all cases

Appendix 5B INITIO & low experience pilot training & progression for multi-crew offshore helicopter pilots[1,4,5]

1 Detailed pilot aptitude testing is required prior to enrolment in the programme

This testing should include evaluation of language skills, cognitive abilities, hand-eye coordination, ability to apply theory and team coordination, etc.

⇩

2 CPL(H) training at an approved flight training school[2]

ATP theory required for operations on multi-pilot helicopters
Total experience 150 hours

⇩

3 IR(H) training at an approved flight training organisation

35 hours flight time
Total experience 185 hours

⇩

4 CPLH/IR(H)

Individual may pass the entry process for company Ab-Inition programme with CPL or can enter programme with CPL as result of structured recruitment process

⇩

5 Company approved training programme

a) Multi Pilot Type Rating Course 10hrs FS+2hrs A/C
b) Multi Crew Co-operation Course 12hrs FS[3]
c) Type IR Course 5hrs FS+2hrs A/C
d) Operator Conversion Course (hrs included in (b) and (c) above)

Total 27 hours (A/C and FS)
Total experience 212 hours

Flight tests by different TRE
a) Combined VMC Licence Skill Test and OPC
b) Type IR Skill Test
Total approx 3 hours

⇩

6 Non-revenue offshore deck landing training by day and night with TRE

a) WDD & HUET Training
b) Minimum 5 day and 5 night deck landings
c) Competence check for release to Line Training

Minimum 5 flight hours
Total experience 220 hours

⇩

7 Line Training Ground Course

GPS Training, Performance, Flight Planning
Dangerous Goods Training
Simulator Line Flight or Jump Seat Line Familiarization

⇩

8 Line Fliying under supervision of a Line Training Captain (LTC)

a) Minimum 10 offshore landings to normal and small decks by day and night
b) 50 flight hours minimum
c) Progress report required for all flights

Total experience 270 hours

⇩

9 Line Check as co-pilot by different LTC

Approx 3 flight hours
Must include and offshore landing and take off
Total experience 273 hours

⇩

10 Released to line

a) Ab-Initio pilots and CPL(H) holders with less than 1000hrs – with any commander who has no less than 500hrs PIC time including 100hrs on type
b) Co-pilots are restricted to day operations unless fully night qualified

⇩

11 Progressive monitoring on line as FO

a) 2 Qualifying Flight Reports per month with a Training Captain or LTC
b) Recurrent Training and OPC/LPC checks
c) 6 monthly progress reviews with training staff
d) Written records of above elements
e) After the co-pilot has 500hrs he can be released to any PIC

⇩

12 Promotion to SFO

Approx 2 year point - promotion board or management evaluation with CP, CTC SLTC
Monitoring continues as above
Total experience approx 1450hrs depending on operational rate of accumulation

⇩

13 Command Course (approx 4 year point)

a) Minimum requirements – ATPLH, 2000hrs helicopter including 1000 as PICUS gained in accordance with the Operators procedures
b) Technical exam
c) RHS checks
d) FS or FTD 3 Training and Assessment
e) CRM assessment
f) Command Line Training
g) Command Line Check by different LTC
h) A letter of recommendation should be forwarded to the OGP Member Company prior to assignment

⇩

14 Promotion to Command

Initially only qualified to fly in command with copilots who have 500 hours total experience including 100hrs on type until the new commander has accumulated 500hrs in command.

Notes
1) Operators may establish equivalent programs for onshore operations, including airplanes, subject to acceptance by OGP Member Companies.
2) The State approved flight training school(s) and curriculum are to be to JAA/FAA or equivalent standards and successfully reviewed by the OGP Member Company. Pilots may be approved to enter the program with an existing CPL if his training program meets the requirements of 4.3.2.
3) For details on the Multi crew Co-operation Courses refer to JARs
4) The program must meet both FAA and JAA certificate standards.
5) Detailed training records are to be maintained for all phases of the training program.

These records will reflect the results of each training session to include the standards to which the pilot was able to complete the exercise or flight requirement.

Appendix 5C Pilot Aircraft Conversion Syllabus and Minimum Hours

Current OGP standards (Appendix 5A) require 100 hours on type for commanders and 50 hours on type for co-pilots, which remains a requirement. However, when introducing new types into service or when changing to alternate types, it may be more appropriate to have an integrated structured training programme; this should consist of a dedicated training package that through the benefits of the training would enable a reduction of the overall hours required.

Tables 1 and 2 below define the elements of the types of training to be completed in the introduction of the type into public transport service and the indicative hours required for each group of elements. An assumption made in building this training analysis is that as part of the initial training on the aircraft type to get it on the pilots licence, the pilot should accumulate a minimum of 15 hours on type. It is recognised that there will be variations to this number in that some pilots may require additional hours, but the total will count as stated towards the total.

The Training must include a minimum of 25% in the simulator and a miminal amount of time in the aircraft as agreed upon by the Member Company per Table 2, unless simulators not available and excluded by risk assessment.

The following guidance gives a breakdown of the training requirements for converting from one aircraft to another; the hours incurred during the initial conversion training will count towards the total defined for the class and type of conversions. The guidance herein defines the generalized model and does not consider every case with all possible variations, therefore, applications for specific variations by model / type should be submitted for consideration to the OGP Member Company Aviation Advisor for approval.

Table 1 Total conversion Hours

	Pilot Conversion Experience with Example Models	TRE/TRI A	Captain & LTC B	Co-pilot C	Remarks
1	Non Series/derivative analogue type aircraft converting to glass cockpit, or glass cockpit to analogue (i.e. Bell 212 analogue cockpit to an EC225 with full glass cockpit)	80 hours (A1)	60 hours (B1)	40 hours (C1)	Includes the total hours accrued in achieving the type rating.
2	Series/derivative analogue type aircraft converting to glass cockpit, or glass cockpit to analogue (i.e. AS332L1 to an EC225, or SK 76A++ to an SK-76C++)	30 (A2)	20 (B2)	10 (C2)	Assuming greater than 150 on the original type. Co-pilot will fly with experienced line training captain with 500 hours on type or derivative type otherwise requires 15 hours.
3	Non-series/derivative type with glass cockpit converting to another glass cockpit (i.e. S76C+ to S92A)	70 (A3)	50 (B3)	35 (C3)	May include change in class of aircraft e.g. small to large. Variant glass cockpits within a series will require a differences/ familiarisation training course.
4	Non series/derivative analogue type single engine aircraft converting to multi engine glass cockpit aircraft with MTOGW of less than 7000lbs, (ie Bell 206analogue cockpit to and EC135 glass cockpit) or to SIC in a multi engine glass cockpit aircraft (ie Captain in Bell 206 to SIC in SK-76C++ or AW 139)	80 (A4)	50 (B4)	40 (C4)	Assumes pilot has no previous multi-engine aircraft experience. Reductions in flight under supervision times may be made commensurate with previous multi engine aircraft time.

Table 2 Training Elements and Hours

All hours listed in Table 2 are indicative and relevant to a generic pilot, but the sum total of the whole should equal the required total conversion hours detailed in Table 1. Subject to a training program being submitted by the Training Captain and the listing below provides a guide to the exercises to be completed. Hours suggested herein are not intended to exactly total the requirement, but to leave an element of latitude for the training captain to allocate to actual needs of the individual. This Table is a sample that might be used for helicopters; it can be modified as needed for airplanes and varying models/types of aircraft and should be approved prior to implementation by the OGP Member Company Aviation advisor.

	Training Location	A1	A2	A3	A3	B1	B2	B3	B4	C1	C2	C3	C4	Comments
Section 1: Pre-flight preparation and checks		0	0	0	0	0	0	0	0	0	0	0	0	
Helicopter exterior visual inspection; location of each item and purpose of inspection	Aircraft													
Cockpit inspection	Aircraft													
Starting procedures, radio and navigation equipment, selection and setting of navigation and communication frequencies	Aircraft or Flight Simulator													
Section 2: Flight Manoeuvres and procedures		#	#	#	#	#	#	#	#	#	#	#	#	
Taxiing/air taxiing in compliance with air traffic control instructions or on instructions of an instructor.	Aircraft or Flight Simulator													
Ground handling- Incl rate of turn limitations	Aircraft													
Pre take-off procedures and checks	Aircraft or Flight Simulator													
Takeoffs various profiles	Aircraft & Flight Simulator													
Cross-wind take-off (if practical)	Aircraft or Flight Simulator													
Take-off at maximum take-off mass (actual or simulated maximum take-off mass)	Aircraft or Flight Simulator													
Take-offs with simulated engine failure														
– Shortly before reaching TDP or DPATO	Aircraft & Flight Simulator													
– Shortly after reaching TDP, or DPATO	Aircraft or Flight Simulator													
Turns	Aircraft & Flight Simulator													
Landings, various profiles	Aircraft & Flight Simulator													
Go around or landing following a simulated engine failure before LDP or DPBL	Aircraft & Flight Simulator													
Landing following simulated engine failure after LDP or DPBL	Aircraft & Flight Simulator													
Normal and abnormal operations of the following systems and procedures:														
Engine/FADEC	Aircraft & Flight Simulator													
Air conditioning (heating/ventilation)	Aircraft & Flight Simulator													
Pitot/static system	Aircraft & Flight Simulator													
Fuel system	Aircraft & Flight Simulator													
Electrical system	Aircraft & Flight Simulator													
Hydraulic system	Aircraft & Flight Simulator													
FMS	Aircraft & Flight Simulator													
Flight Control and Trim System	Aircraft													
Anti and de-icing system	Aircraft & Flight Simulator													
Autopilot/Flight Director	Aircraft													
Stability augmentation device	Aircraft													

	Training Location	A1	A2	A3	A3	B1	B2	B3	B4	C1	C2	C3	C4	Comments
Weather radar, radio altimeter and transponder	Aircraft & Flight Simulator													
Area navigation system	Aircraft													
Landing gear system	Aircraft & Flight Simulator													
APU (if applicable)	Aircraft or Flight Simulator													
Radio, navigation equipment, instrument flight management	Aircraft & Flight Simulator													
Turns with 30 degrees bank, 180 degrees to 360 degrees left and right by sole reference to instruments.	Aircraft													
Section 3: Instrument procedures (to be performed in IMC or simulated IMC)		#	#	#	#	#	#	#	#	#	#	#	#	As required for use of systems
Instrument take-off: transition to instrument flight is required as soon as possible after becoming airborne.	Aircraft & Flight Simulator													
Adherence to departure and arrival routes and ATC instructions	Aircraft & Flight Simulator													
Holding procedures	Aircraft & Flight Simulator													
ILS approach down to CAT 1 decision height	Aircraft or Flight Simulator													
– Manually without a flight director	Aircraft & Flight Simulator													
– Manually with flight director	Aircraft													
– With coupled autopilot	Aircraft													
– Manually with one engine simulated inoperative	Aircraft													
Non precision approach down to the minimum descent altitude MDA/H	Aircraft & Flight Simulator													
Missed approach procedures	Aircraft or Flight Simulator													
Go around with all engine operating on reaching decision height/MDA	Aircraft & Flight Simulator													
Go around with one engine simulated inoperative on reaching decision height/MDA	Aircraft													
Autopilot degraded modes and SAS ops	Flight Simulator													
Airborne Radar Approaches	Aircraft													
Screen Failure management	Aircraft & FS													
Use of Standby instruments	Aircraft													
IMC autorotation with power recovery	Aircraft & Flight Simulator													
Section 4: Additional General Handling		18	5	15		10	2	10		10	Opt	7		
Left and right seat handling	Aircraft & FS													
Offshore Deck landings	Aircraft													
Fully coupled approaches	Aircraft & FS													
Use of upper modes	Aircraft & FS													
– Speed/climb/descent/manoeuvres	Aircraft & FS													

	Training Location	A1	A2	A3	A3	B1	B2	B3	B4	C1	C2	C3	C4	Comments
– Glass cockpit screen management	Aircraft & FS													
– Degraded mode operations	Aircraft & FS													
Section 5: Night Flying		5	Opt	5		2	Opt	2		2	Opt	2		If applicable
Night Deck Landing	Aircraft													
Screens management	Aircraft and FS													
Rejected take-off	Aircraft													
Continued take-off	Aircraft and FS													
Night recency	Aircraft													
Night Competency assessment	Aircraft													
Section 6: LOFT and CRM		4	2	4		4	2	4		4	2	4		LOFT mandated requirement specified in hours and includes whole crew
Specified Loft Scenarios	Flight Simulator													One LOFT Exercise to include a Ditching
3rd seat CRM assessment flights	Aircraft													
Section 7: Navigation and Line flying exercises		4	Opt	4		4	Opt	4		2	Opt	2		
Navex to be conducted out of theatre	Aircraft													
Line flying experience conducted in theatre	Aircraft													
– to include cabin attendant integration where appropriate	Aircraft													
Section 8: Use of optional equipment		2	Opt	2		2	Opt	2		Opt	Opt	Opt		
HUMS/HOMP	Aircraft													As required for equipment installed on the contracted helicopter
EGPWS	Aircraft													
ACAS/ACAD	Aircraft													
Section 9: Systems Familiarity and knowledge		22	8	15		15	5	10		5	Opt	4		
Abnormal and emergency procedures	Aircraft & Flight Simulator													
Tail rotor control failure	Flight Simulator													
Tail rotor loss	Flight Simulator													
Fire drills	Aircraft & Flight Simulator													
Smoke control and removal	Flight Simulator													
Engine Failures, shut down and restart at safe height	Aircraft													
Fuel Dumping	Flight Simulator													
Autorotation descent	Aircraft & Flight Simulator													
Autorotative landing or power recovery	Aircraft & Flight Simulator													

	Training Location	A1	A2	A3	A3	B1	B2	B3	B4	C1	C2	C3	C4	Comments
Incapacitation of a crew member	Aircraft & Flight Simulator													
Other emergency procedures as outlined in the appropriate flight manual	Aircraft & Flight Simulator													
Section 10: Special Task Operations		Opt	Opt	Opt		Opt	Opt	Opt		Opt	Opt	Opt		
Public Transport HHO (e.g. Marine Pilot transfer)	Aircraft													Only required where pilots under training will have requirement to carry out Special Task Operations, this can be part of the total training hours if the Training Captain agrees the student has reached the standard for additional development beyond the basic public transport operations but specifically may not use more than 10 % of the total training allocation required for the class of pilot in Table 1 above
Underslung Loads	Aircraft													
Fire Fighting	Aircraft													
Secondary SAR	Aircraft													
Homing	Aircraft													
Search patterns	Aircraft													
Use of Night Sun	Aircraft													
Section 11: Phase Checks														
Phase 1 – Test on Manoeuvres sections 1-12 (as applicable)	Aircraft or FS													
Phase 2 – Test on Manoeuvres Sections 1-12 (As applicable) plus LOFT scenario.	Aircraft													
Phase 3 – Final Route Check	Aircraft													
Section 15: Flight Under Supervision if for single pilot aircraft (Revenue Flights)														
Define requirements for flight under supervision, prior to solo revenue flights	Aircraft													
Total time to be considered qualified in type		80	30	70	80	60	20	50	50	40	10	35	40	

Ground Training

Section 13: Ground Training Courses Etc.														
Initial Ground School	Classroom													
Self study	As Required													
Refresher Courses	Classroom													
Operational /Technical tests	As required													
Section 14: Computer Based Trainings														
– CBT	As available													
– FTDs	As available													

Appendix 5D Engineering, load master, helideck personnel, aerial observer and dispatcher qualifications & experience

Table 5D-1 General Experience Requirements

	Aerial Observer	Chief Engineer Airplane[4]	Chief Engineer Helicopter[4]	Engineer Airplane[4]	Engineer Helicopter[4]	Load Master	Dispatcher	Helideck Personnel
Supervisory Role		1 Year						
Total Time on Airplanes or Helicopters		5 Years		2 Years		1 Year[3]		
Total Time in Field Operations		2 Years		1 Year				
Appropriate ratings (airframe, powerplant, instrument or avionics) issued by the local civil aviation authority		Yes						
Approved factory course or regulatory approved programme on aircraft type and engine for the aircraft being maintained		Yes[2]						
Formal training and field experience in helicopter and/or airplane operations, aircraft dispatching, weather forecast interpretation and radio procedures. Full knowledge of local civil aviation requirements.							Minimum 1 Year Experience[1]	
Formal training and experience in radio procedures, observation techniques and duties, and obstacles/hazard identification	Minimum 1 Year Experience[1]							
Formal training and field experience in helicopter external lift, winch and cargo requirements (Or for Airplane operations loading systems and cargo requirements). Full knowledge of local civil aviation requirements						Minimum 1 Year Experience[1]		
Formal training in Helideck Attendant or Helicopter Landing Officer duties and responsibilities compliant with OPTIO or an equivalent standard								Minimum 1 Year Experience[1]
Refresher Training conducted, including a Human Factors component and testing on knowledge of applicable manuals	Maximum interval of 3 years							

Notes:

1. *Or competence checked by Company personnel.*
2. *In some countries, the CAA does not approve such courses. Notwithstanding, the Operator will have a written training program for each aircraft/engine type.*
3. *Experience required in Airplanes or Helicopters as appropriate.*
4. *Engineering Qualifications/Experience: Subject to the air operator's training organization being approved under EASA Part 147, EASA Part 66 qualifications should be applied. Experience levels acquired whilst obtaining EASA Part 66 licence privileges are acceptable. Where EASA Part 66 licences have not been granted, local national equivalence is recommended.*

Table 5D-2 below summarises prior experience requirements (in addition to basic formal training course requirements) for the award of an EASA Part 66 licence. Certifying staff (i.e. those authorised to sign Certificates of Release to Service (CRS)) must, where required, have local regulator license endorsements.

Table 5D-2 EASA Prior Engineer Experience Requirements

Licence Category Applicant	Required years practical maintenance experience on aircraft (depending upon prior relevant training as defined and assessed by competent authority)
Category A	1 to 3 years
Category B1 and B2	2 to 5 years
Category C	3 to 5 years

Where local national licensing requirements differ from those required by EASA Part 66 (i.e. the combination of EASA Part 66 training time and additional year(s) practical application under supervision in a Part 145 organization), it is recommended that fitters, mechanics and licensed aircraft engineers:

- Obtain the equivalent number of years experience under supervision prior to exercising full license privileges when maintaining aircraft on contract, and
- may be employed as unlicensed trainees until such time as they have acquired the required equivalent combination of EASA Part 66 training time and additional year(s) practical application under supervision in a Part 145 organization.

Unlicensed and trainee personnel (including licensed personnel, other than those qualified under EASA Part 66), may be employed in support of the maintenance of aircraft contracted to OGP members provided they are subject to 100% supervision at all times. The ratio of unlicensed/trainee to qualified personnel should be agreed with the OGP Member Company.

Table 5D-3 below illustrates EASA Part 66 licence holder and broadly equivalent acceptable qualification and experience levels for other licence holders, plus prior experience requirements for supervisory and management appointment holders.

Table 5 D-3 Engineer Qualifications EASA or Equivalent

EASA Part 66 Licence Category	Privileges	EASA Part 66 Requirements	Minimum Experience	Equivalent non-EASA Part 66 Qualification	Typical Role
Unlicensed Trainee	None	Subject to 100% supervision	Subject to air operator selection process	As per EASA Part 66	Trainee
A	CRS up to weekly inspections. Limited and simple failure rectification	800 hrs basic training in a Part 147 organization, plus 1 year practical in a Part 145 organization	Subject to air operator selection process	Unlicensed Mechanic – no CRS privileges	Fitter, Mechanic
B1	CRS line maintenance. Failure rectification including avionics systems (no avionics test equipment)	2400 hrs basic training in a Part 147 organization, plus 2 years practical in a Part 145 organization	Applicable Type endorsement(s)	A&P Technician, etc	Licensed Aircraft Engineer (LAE)
B2	CRS line maintenance of avionics systems (Note: may have restricted privileges). Failure rectification of avionics systems	2400 hrs basic training in a Part 147 organization, plus 2 years practical in a Part 145 organization	Applicable Type endorsement(s)	Avionics Technician, Radio etc	Licensed Aircraft Engineer (LAE)
C	CRS Base Maintenance	3 years as B1 or B2 technician or academic degree acceptable to competent authority		NA	Licensed Base Maintenance Engineer
Continued Validity					
Continued Validity: all Part 66 licences	For as long as licence remains valid	Invalid after 5 years unless submitted to competent authority			
Independent Inspections					
Independent Inspections	B category licence subject to licence category privileges held.	In all cases, the first signatory must hold certification privileges (CRS) or equivalent for that aircraft type, as expressed in EASA Part M.	The second signatory must be able to demonstrate that they are competent and qualified to complete the independent inspection, by either; Holding CRS certification privileges for that aircraft type, OR Providing evidence of suitable training and relevant experience to certify that level of independent inspection		Independent Inspections shall be carried out on any flight safety sensitive maintenance task and those defined by the operator as critical tasks or vital points
Supervisory and Management Appointment Experience Requirements					
B1/B2/C	As above for licence category held, or CRS Base Maintenance	As above	5 years exercising Cat B privileges. Must have type endorsement in the contracted aircraft type	As above	Senior LAE, Shift Supervisor, Quality Supervisor
B1/B2/C	As above	As above	7 years exercising Cat B privileges. Must have type endorsement in the contracted aircraft type, except where multiple types are operated in which case appropriate group type endorsement required (i.e. large helicopters)	As above	Base Chief Engineer, Quality Manager
B1/B2/C	As above	As above	12 years exercising Cat B (Cat B/C for Part 145 Base Maintenance) privileges including Type endorsement in the appropriate group (i.e. large helicopters)	As above	Director Maintenance, Chief Engineer; or, Director, Manager Part 145 Base Maintenance

Appendix 6 Contents

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Appendix 6 Aviation weather guidelines

A6.1 General

This document is a provided as a guide for planning and operational decisions in regard to weather, both adverse and routine, and the impacts of weather criteria on aircraft selection/operation. It is designed for use for all aircraft operations, both aeroplane and helicopter, and for onshore/offshore operations.

A6.2 Operating environment & weather

A6.2.1 Hostile vs. non-hostile environment

In determining the type of aircraft and the operational parameters to be specified for a specific project, the user should first determine the type of operating environment (hostile or non-hostile), including weather considerations, as noted in Chart 1 at the end of this appendix.

A6.2.2 Risk factors

Factors to be considered in determining the environment include: local topographical considerations; weather and temperature conditions; restrictions to visibility; day or night; flight-crew experience in the environment and operation; type of operation; availability of infrastructure such as airfields, helipads, refuelling, and navigational aids; communications; aircraft type; protection of occupants following an unscheduled landing; and search and rescue resources in the area of operation. See Chart 2 for a matrix of related weather factors and the Survival Equation Matrix at the end of this Appendix.

A6.2.3 Hostile environment

Hostile environment definition

An environment in which a successful emergency landing cannot be assured, or the occupants of the helicopter cannot be adequately protected from the elements, or search and rescue response/capability cannot be provided consistent to the anticipated exposure.

Hostile environment aircraft requirements

A twin-engine aircraft able to sustain one engine inoperative (OEI) flight in cruise should be specified for operations in a hostile environment. See Chart 1.

A6.2.4 Non-hostile environment

Non-hostile environment definition

An environment can be considered non-hostile subject to the criteria shown in Chart 1 and satisfactory review and or mitigation of each of the following:

a) an environment in which a successful emergency landing can be reasonably assured;
b) the occupants can be protected from the elements; and
c) search and rescue response/capability is provided consistent with anticipated exposure.

Non-hostile environment aircraft requirements

Single-engine aircraft that have been satisfactorily reviewed may be used in a non-hostile environment. See Chart 1.

A6.3 Flight rules & weather

A6.3.1 Instrument Flight Rules (IFR)

IFR operations should comply with local regulatory IFR weather minimums unless more stringent Company requirements are issued.

A6.3.2 Visual Flight Rules (VFR)

Weather minimums are contained in the table below.

Local regulatory minimums are to be followed when their guidance is more conservative than those contained in the table below or in mission-specific weather minimums presented in other sections of this guide.

A6.3.3 VFR weather minimums

Flight Regime	Minimum Operating Height (1)	Cloud Base (feet)	Visibility (SM) (4)	Requirements to fly given these VFR weather minimums (2)
Offshore - Day	500 Feet (3,4)	600 Feet	3 SM (3,4)	
	400 Feet	500 feet	1/2 SM	Offshore helicopter interfield use only if visual contact is maintained with other facilities.
Overland - Day	500 Feet (3)	600 Feet	3 SM (3)	
All Night Ops (3)	Night Flights will be flown using only IFR procedures and minimums where available, otherwise the VFR minimum shall be a cloud base of 1000 feet with 100 feet of vertical cloud clearance and 3 SM visibility.			Twin-engine IFR certified helicopter with dual IFR-night current crew. All night flights should utilize IFR cockpit procedures for takeoffs and landings.

A6.3.4 Weather Reports

Providing accurate aviation weather for both current and forecast conditions should be a priority for all flight operations.

Use of personnel trained and certified as aviation weather observers or an Automated Weather Observation System (AWOS) which also provides certified aviation weather are recommended for long-term projects, where appropriate.

When provided, weather reporting equipment should be capable of determining the following information: wind speed and direction, barometric pressure, temperature, visibility, and ceiling height. Sea state should also be provided for helideck operations and for floating facilities helideck pitch, roll and heave data.

A6.3.5 Adverse Weather Planning

Purpose

The purpose of Adverse Weather Guidelines are to provide open dialogue between the Aircraft Operator and the OGP Member's local aviation contact when weather conditions become marginal for normal aircraft operations. The dialogue may identify mitigating measures necessary to continue operations at an equivalent level of safety or result in the decision to suspend operations.

Notes:

1) *The minimum operating height refers to the height Above Ground Level (AGL) for overland flights, and the height Above Mean Sea Level (AMSL) for offshore flights.*

2) *VFR Flights may not depart or continue if the weather conditions at departure, en-route or the destination are below the above stated minimum.*

3) *Minimum operating height for Day VFR less than a ceiling to 600 feet (inclusion of 100 feet of cloud clearance) and visibility to 2 SM may be allowed if the procedures are authorized by the appropriate authority.*

4) *When lower minimums are used, it is recommended that only those twin-engine IFR certified with a dual pilot IFR current crew be used.*

Guidance

OGP Member Companies should, through a risk analysis, determine if a localized Adverse Weather Policy should be adopted. Some considerations for an Adverse Weather Policy for offshore helicopter operations can be found below.

All factors, including discussions with the Operator, should be reviewed in establishing local adverse weather operational limits.

The OGP Member should always have the option to delay or cancel a flight, even when conditions are technically within limits, should it choose to do so.

The Aircraft Operator's Operations Manuals may have more restrictive guidelines than those listed in this document.

Factors to Consider

Factors that should be considered in determining if flights should be performed in adverse weather include:

a) Aircraft Operator's compliance with regulatory, Company Operations Manual, and OGP Member's weather and operational limitations.
b) Safe movement of passengers and operation of the aircraft at the landing/departure site.
c) Rescue provisions, which will provide a reasonable expectation of rescue both en-route and at the landing site, in the event of a forced landing.
d) Degree of urgency of proposed flights.

Precautionary Weather Condition Zone

When conditions have become marginal or reached any of the criteria listed below, the situation may be considered to have reached the "adverse" level, where OGP Member review or intervention may be justified and where "routine" flights may be curtailed.

a) High wind speed or gust spread: aircraft Flight Manuals have operational limits for both speed and gust spread that should be considered, but in any case when wind speed reaches 53-59 knots, OGP Members should consider:
    i) Specialized passenger handling procedures; and
    ii) advising inbound flights of the weather conditions.
b) Weather less than 600-foot ceiling and 3 miles visibility (see above) require IFR capable multi-engine aircraft and crew.
c) Severe loose dust or blowing snow or other conditions at the landing site that may inhibit visibility requires specialized pilot training and/or operational procedures.
d) Severe cold conditions below -29° Celsius (-20°F) may require specialized passenger and aircraft handling procedures.
e) Any other conditions established for this Zone by the OGP Member.
f) At this stage, the aircraft crew or Aircraft Operator will be expected to indicate that Precautionary Limits have been reached, will advise the OGP Member's local aviation contact, and jointly they will reach agreement on whether flights should continue or be delayed.
g) The OGP Member's supervisor responsible for operations should review all proposed aircraft operations, to determine whether such flights are essential to meet company objectives, or should be delayed. When delaying flights, the supervisor may consider prioritizing as noted below:
    i) Flights for visits by non-operational staff or other non-essential flights.
    ii) Flights for routine crew changes.
h) Where a number of the criteria above exist simultaneously or if the flights will be at night, the supervisor should assume that the risk level will be higher.

Emergency Weather Condition Zone

Among the conditions to be considered when routine or precautionary level flights shall be considered for curtailment and only emergency operations should be considered are those listed below.

a) Winds above 60 knots.

b) Extreme cold below -40°C (-40°F).

c) For all floatplanes, no water landings with sea state above one foot. For amphibious floatplanes, no landings below -1°C (+30°F).

d) Any other conditions established for this Zone by the OGP Member Company.

e) Flights in this Zone are normally performed only with multi-engine IFR equipped aircraft and dual IFR qualified pilots.

f) At this stage, the flight crew, Aircraft Operator or OGP Member's local aviation contact will be expected to indicate that guideline limits have been reached, and all flights should be delayed, except for life-saving flights.

g) Qualified medical advice should be sought before launching an emergency flight for medical reasons, in order to establish that the risk facing the patient exceeds the risk to the aircraft and crew.

h) OGP Member's supervisors should consider the landing area unsafe for personnel for routine or precautionary operations.

A6.4 Offshore helicopter weather limits & reporting

A6.4.1 Limitations

Section A6.3.3 provides offshore weather limitations and procedures to be followed for adverse weather.

A6.4.2 Floating helidecks - pitch, roll, heave & additional weather limitations/ guidelines

Conditions	Limits for Landing - Day	Limits for Landing - Night	Limits for Planning - Day	Limits for Planning - Night
Pitch and Roll	+3°	+2°	+3°	+2°
Average Heave Rate	1.0 m/sec	0.5 m/sec	1.3 m/sec	0.5 m/sec

Measurement of Pitch, Roll & Heave (PRH)

A method of measuring PRH shall be available and a means provided to transmit that data to flight crews prior to landing. The accelerometers for such measurements should be located as close to helideck level and centerline as possible to provide accurate readings. The accelerometer readings may be processed by sophisticated software that can produce accurate helideck level measurements of PRH regardless of the accelerometer location. Provided the system is operational, and these calculations can provide accurate output of the helideck PRH movements, they may be used for pilot information.

If the PRH measurement system is capable of recording accurate helideck movements for at least ten minutes and can calculate the average heave rate, then less restrictive limits than those indicated in the chart above may be applied to specific floating facilities. Such variances must be allowed in the local operator's Operations Manual, and be documented in the local helideck operating procedures/ diagrams and facility helideck procedures. The OGP Member's Aviation Advisor should be consulted for relevant guidance before the variances are implemented.

When a vessel gives clearance for a helicopter to land on deck, the intention is for that vessel to maintain the existing heading while the helicopter remains on the deck. The monitoring station

providing deck motion limits and wind data must be manned during the entire time the helicopter is operating on the deck.

The helicopter crew is to be notified immediately by radio if any of the following occurs: the vessel goes off heading by 10 degrees or more, there is a vessel/installation or station keeping/handling problem, pitch/roll/heave exceeds the limits in Table 4.2 above, a significant change in the relative wind of 30 degrees or more, or there is any other abnormal event.

The operational limitations for helicopter operations to monohull vessels with helidecks greater than or equal to eighty (80) feet above sea level are more restrictive than the chart above, may vary by helicopter model, and prior to operation to such vessels, the OGP Member's Aviation Advisor should be contacted for relevant guidance.

Deck Limitations are not applicable for takeoff from the helideck.

A6.5 Offshore helicopter adverse weather operational limitations

A6.5.1 Purpose

See Section A6.3.5 for general planning guidance for adverse weather.

A6.5.2 Factors to consider

Among factors that should be considered in determining if flights should be performed in adverse weather, in addition to those listed in A6.3.5 are the following:

a) Safe movement of passengers and operation of the helicopter on the helideck.
   i) Assign helideck assistance as necessary.
   ii) Consider changing passengers out 1-1, 2-2, *etc.*
   iii) Consider use of helideck rope from stairwell to a point adjacent to helicopter (do NOT tie the rope to the helicopter).
   iv) Brief passengers on special helideck procedures.

A6.5.3 Precautionary weather conditions

When conditions broadly reach any of the criteria listed below, and those shown in Section A6.3.5 (Precautionary weather condition zone), the situation may be considered to have reached the "Adverse" level, where OGP Member Review/Intervention may be justified (see Chart 2).

a) Wind speed 53-59 knots.
   i) Suspend flights to unmanned structures.
   ii) Implement special passenger handling procedures.
   iii) Advise inbound flights of weather conditions.
   iv) Implement Search & Rescue (SAR) procedures for adverse weather.
b) Significant wave height above 5.5 meters, but less than 7.0 meters.
c) Weather less than 600-foot ceiling and 3 miles visibility (see Section A6.3.3). IFR capable helicopter and crew required.
d) Pitch, roll, and heave exceeding the guidelines in Section A6.4.2 for floating offshore structures.
   i) The helicopter Flight Manual and Aircraft Operator's Operations Manual should be reviewed to determine if landings are possible.
   ii) If no criteria exist for the model being flown, then the criteria listed above apply.
e) Flights in this zone are normally performed only with multi-engine helicopters.

f) At this stage, the helicopter crew will be expected to indicate that Precautionary Limits have been reached, will advise the OGP Member's local aviation contact, and jointly they will reach agreement on whether flights should continue or be delayed.

g) The OGP Member's supervisor responsible for operations should review all proposed helicopter operations to determine whether such flights are essential to meet Company objectives, or should be delayed. In addition to the items listed in Section A6.5.3 (Precautionary weather condition zone), OGP Member's should also consider delaying flights to unmanned structures.

h) Where a number of the criteria above exist simultaneously or if the flights will be at night, the supervisor should assume that the risk level will be higher.

A6.5.4 Emergency weather conditions:

Only emergency operations should be attempted when conditions reach those shown in Section A6.5.3 (Emergency weather condition zone) and those indicated below. See Chart 2.

a) Snow or ice accumulation on the helideck.

b) Sea-spray blowing across helideck.

c) Significant Wave height above 7.0 meters.

d) Pitch, roll, and heave on floating structures exceeding the limitations for helicopter operations as listed in Section A6.4.2.

e) Flights in this zone are normally performed only with multi-engine IFR capable helicopters and dual IFR qualified pilots.

f) At this stage, the helicopter flight crew will be expected to indicate that guideline limits have been reached, and all flights should be delayed, except for life-saving flights.

g) Qualified medical advice should be sought before launching an emergency flight for medical reasons, in order to establish that the risk facing the patient exceeds the risk to the helicopter and crew.

h) Platform supervisor considers helideck unsafe for personnel for routine operations.

A6.5.5 Flow-charts for decision-making

Chart 1 is designed to assist in determining Hostile versus Non-hostile environments whilst Chart 2 to assist local aviation contacts and managers in decision-making during adverse weather. These charts are not intended to be used in isolation as comprehensive knowledge of local environments is also vital in making informed decisions.

Chart I – Hostile/Non-Hostile Environment Aircraft Considerations

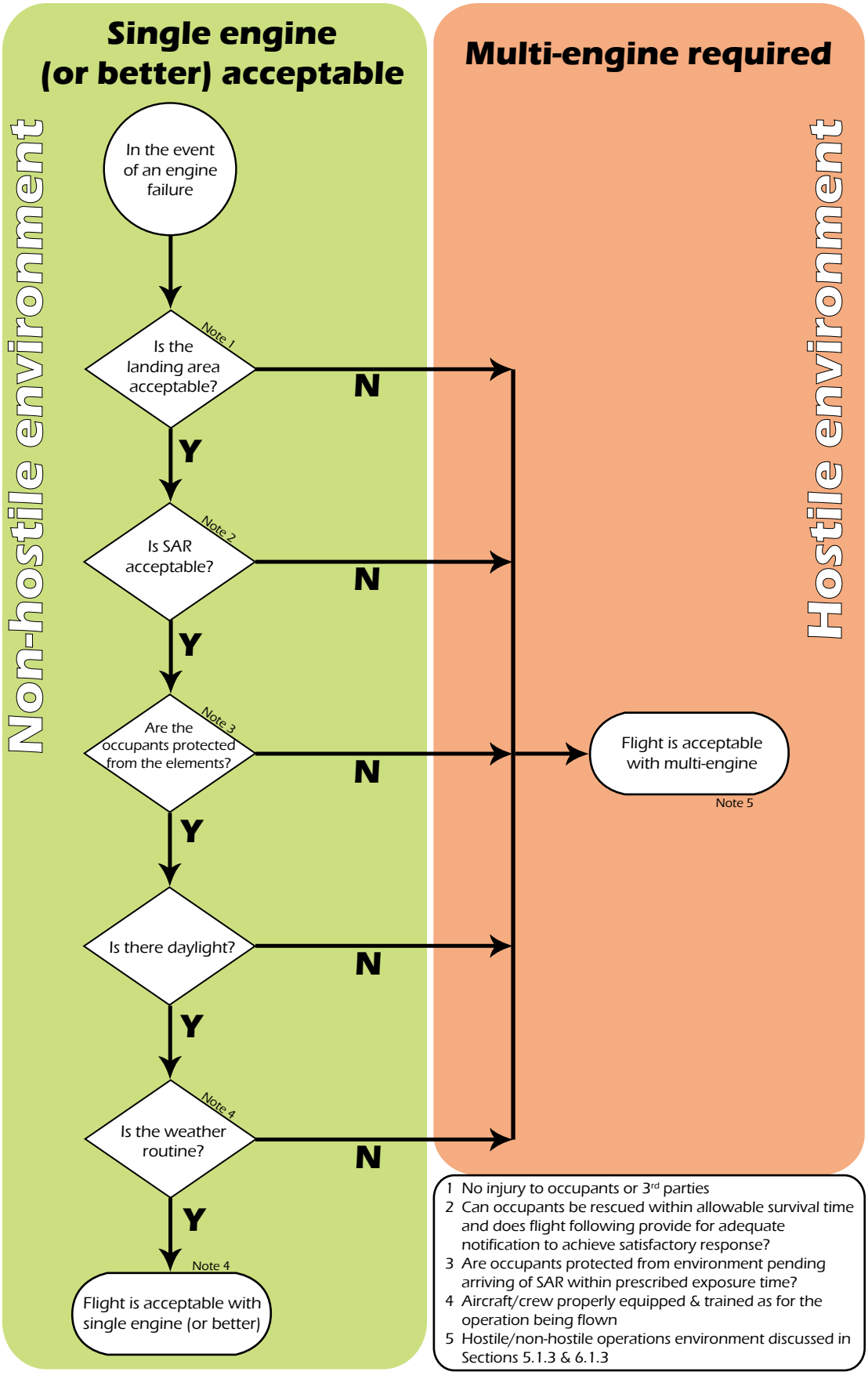
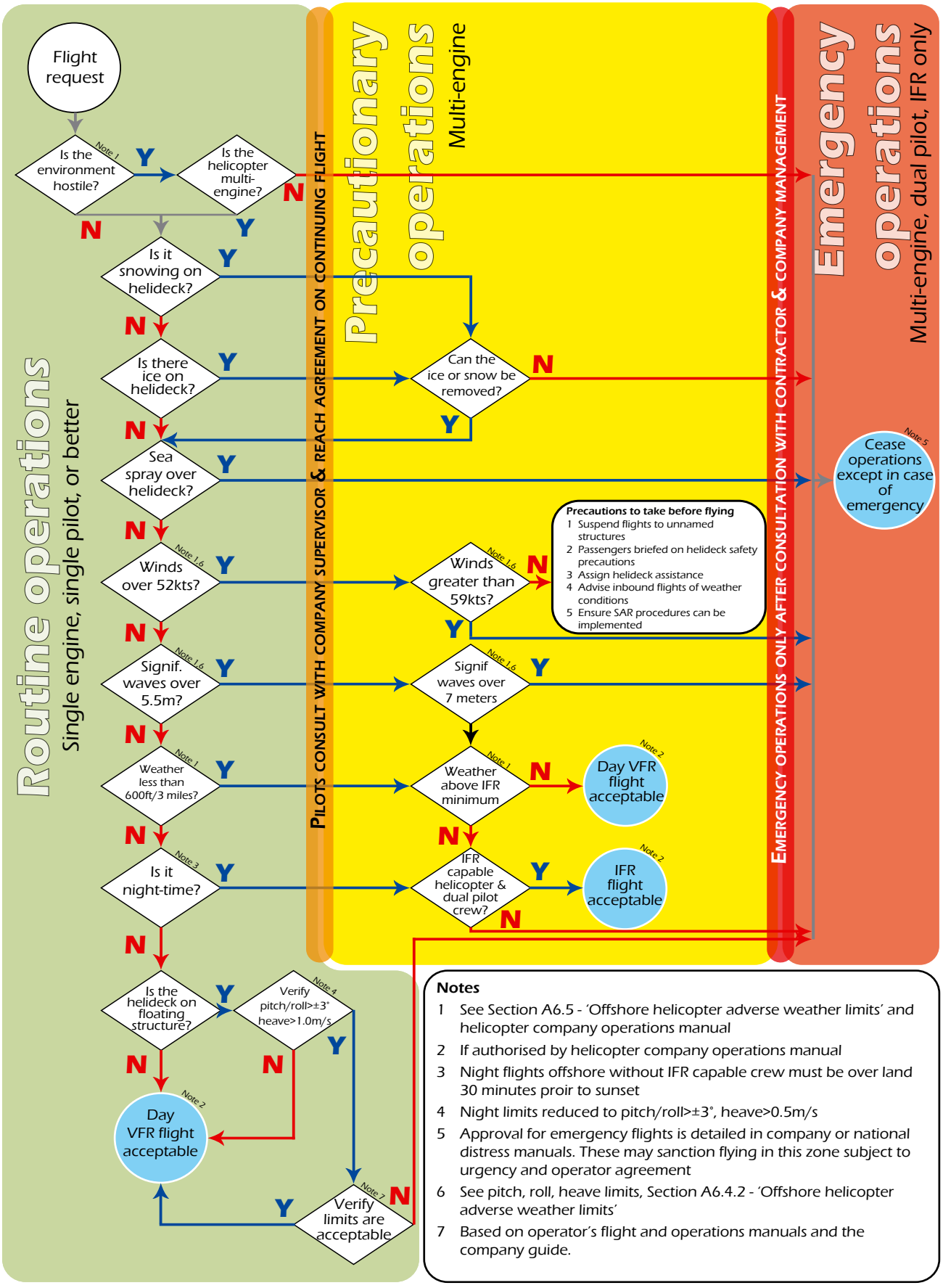


Chart 2 – Offshore helicopter adverse weather planning considerations



Notes

1 See Section A6.5 - 'Offshore helicopter adverse weather limits' and helicopter company operations manual

2 If authorised by helicopter company operations manual

3 Night flights offshore without IFR capable crew must be over land 30 minutes proir to sunset

4 Night limits reduced to pitch/roll>±3°, heave>0.5m/s

5 Approval for emergency flights is detailed in company or national distress manuals. These may sanction flying in this zone subject to urgency and operator agreement

6 See pitch, roll, heave limits, Section A6.4.2 - 'Offshore helicopter adverse weather limits'

7 Based on operator's flight and operations manuals and the company guide.

Appendix 7
Recommended aircraft equipment fit

Equipment requirements for aircraft are an important consideration and can have an impact on the aviation portion of a project's budgets. Consequently it cannot be overstated that the Aviation Advisor must be involved as early as possible, and have a clear understanding of the project and the associated constraints. Ultimately, the goal is to correctly equip the aircraft to match the task thereby enabling the crew to complete the job safely.

In determining appropriate aircraft and equipment several points need to be considered; project needs, the environment to be operated in, and the length of the contract.

Project needs should be clearly understood by the aviation advisor.

1) Is the aircraft to fly cargo and or passengers?
2) Will the operation include offshore operations or other specialized operations?
3) Will the aircraft be used to provide medical evacuation support?
4) How critical is aviation support to the overall project?

The operating environment for the project refers to the distinction between Hostile vs Non-Hostile environment. Hostile is an environment where a successful emergency landing cannot be assured, the occupants of the aircraft cannot be adequately protected, or search and rescue response/capability cannot be provided consistent with the anticipated exposure.

Non-Hostile is an environment in which a successful emergency landing can be reasonably assured, the occupants can be protected from the elements, and search & rescue response capability is provided consistent with anticipated exposure.

The *Aircraft Management Guide* contains for a general discussion on aircraft and aircraft operator selection, which contains further discussion of operating environments. Essentially the Aviation Advisor should attempt to mitigate the risk of the operating environment with a properly equipped aircraft and appropriate search & rescue (SAR) capability. Appendix 6 contains a guide for planning and operational decisions in regard to weather, both adverse and routine, and the impacts of weather criteria on aircraft selection/operation. It is designed for use for all aircraft operations, both aeroplane and helicopter, and for onshore/offshore operations. Appendix 12 contains considerations for SAR and requirements for aircraft providing SAR as a secondary role.

The length of contract is often a constraint but should not stop getting the right equipment for a particular project. As a general statement a long-term contract is one that is at least one year. However, the real deciding factor on aircraft equipment and ultimately aircraft performance is the operating environment.

The following equipment lists are not inclusive for every environment, but will provide a reasonable start point for most operations.

Aeroplane recommended equipment

<table>
<tr><th>Equipment</th><th>Multi-Engine Turbine & Jet ≥ 5,700kg</th><th>Multi-Engine < 5,700kg</th><th>Single-Engine Aeroplanes</th></tr>
<tr><td>Operated by two qualified crew (5)</td><td>M</td><td>M(5)</td><td rowspan="2">May be operated single pilot, VFR Day</td></tr>
<tr><td>IFR Certified</td><td colspan="2">M</td></tr>
<tr><td>Autopilot</td><td rowspan="2">M</td><td rowspan="2">R</td><td rowspan="2">O</td></tr>
<tr><td>1 DME (where available)</td></tr>
<tr><td>1 ADF (2 required if ADF is sole source of navigation)</td><td colspan="2" rowspan="3">M</td><td rowspan="6">O</td></tr>
<tr><td>2 VOR/ILS</td></tr>
<tr><td>CVR/FDR, when required by local CAA/Company</td></tr>
<tr><td>Radio altimeter with audio & visual alert with analogue display (7)</td><td rowspan="2">M</td><td rowspan="2">MLT/R</td></tr>
<tr><td>Weather radar (colour screen preferred)</td></tr>
<tr><td>Public Address (PA) system (6)</td><td>MLT</td><td>RLT</td></tr>
<tr><td>Enhanced Ground Proximity Warning System (EGPWS or TAWS)</td><td>MLT/R</td><td>R</td></tr>
<tr><td>2 VHF transceivers</td><td colspan="3" rowspan="8">M</td></tr>
<tr><td>1 HF transceiver (if VHF coverage area not assured)</td></tr>
<tr><td>GPS (IFR TSO preferred) (6)</td></tr>
<tr><td>Mode C or S transponder (or equivalent)</td></tr>
<tr><td>ELT with TSO 126 or equivalent preferred (4) (7)</td></tr>
<tr><td>First-Aid kit</td></tr>
<tr><td>Passenger briefing cards</td></tr>
<tr><td>Fire extinguisher with pressure gauge preferred</td></tr>
<tr><td>Collision Avoidance System - active interrogating only (where available) (6)</td><td colspan="3">RLT</td></tr>
<tr><td>Portable Emergency Radio Beacon (EPIRB)</td><td colspan="2" rowspan="2">O</td><td>MLT/R</td></tr>
<tr><td>Engine Monitoring System (1)</td><td>RLT/O</td></tr>
<tr><td>1 Raft with ability to attach to aircraft via lanyard</td><td colspan="2">M extended overwater flights</td><td rowspan="2">M Float-Planes</td></tr>
<tr><td>Sonar Transmitter (pinger), attach to CVR if equipped</td><td colspan="2">O</td></tr>
<tr><td>Survival equipment, appropriate for environment being flown (e.g. Arctic, jungle, desert, sea, etc.)</td><td colspan="2">R</td><td>M</td></tr>
<tr><td>Life jackets with attached single devices, and water activated lights. Crotch strap design preferred.</td><td colspan="3">M for Extended Overwater Flights or for floatplanes.
M wear regardless of distance flown overwater</td></tr>
<tr><td>Cabin heat</td><td colspan="3">M for temperatures below 15°C</td></tr>
<tr><td>Carbon monoxide detector in cockpit (electronic)</td><td colspan="2">M with fuel/shroud heaters</td><td>M Piston</td></tr>
<tr><td>De-icing equipment (3)</td><td colspan="3">M for known, forecast or anticipated icing conditions</td></tr>
<tr><td>Medical evacuation kit capability</td><td colspan="3" rowspan="2">O</td></tr>
<tr><td>Large cargo door capability</td></tr>
</table>

M = Minimum R = Recommended LT = Long-Term (1 year +) O = Optional

Notes: (For Aeroplane Recommended Equipment opposite)

1) *When an approved modification exists for the aircraft type.*
2) *All night flights SHOULD be flown with multi-engine turbine, equipped for IFR flight, using IFR flight procedures & dual pilot.*
3) *Aeroplane de-icing equipment should be approved and functioning for the prevention or removal of ice accumulation, or be certified for a limited icing clearance approved.*
4) *406 MHz ELT preferred*
5) *Geophysical and Pipeline Patrol operations may be flown single pilot.*
6) *Required on Pipeline Patrol Aircraft.*
7) *Recommended on Pipeline Patrol Aircraft.*

Helicopter recommended equipment

<table>
<tr><th>Equipment</th><th>Multi-Engine 10 or more passengers</th><th>Multi-Engine 9 or fewer passengers</th><th>Single-Engine Helicopters</th></tr>
<tr><td>Operated by two qualified crew</td><td rowspan="3">M</td><td rowspan="3">VFR Day may be single pilot (7)</td><td rowspan="3">VFR Day Opns only, may be single pilot</td></tr>
<tr><td>IFR Certified</td></tr>
<tr><td>Autopliot or AFCS</td></tr>
<tr><td>2 primary transceivers with 1 VHF minimum</td><td colspan="3" rowspan="5">M</td></tr>
<tr><td>Mode C or S transponder</td></tr>
<tr><td>ELT with TSO 126 preferred (5)</td></tr>
<tr><td>Passenger briefing cards</td></tr>
<tr><td>GPS/Loran (IFR TSO preferred, non-IFR TSO single-engine acceptable)</td></tr>
<tr><td>1 HF transceiver</td><td colspan="3">M, if VHF coverage is not assured for the entire area</td></tr>
<tr><td>1 ADF, 2 required if ADF is only navigation source</td><td colspan="2" rowspan="2">N/R VFR (7)</td><td rowspan="2">0</td></tr>
<tr><td>2 VOR/ILS & 1 DME (where DME is available)</td></tr>
<tr><td>Instantaneous Vertical Speed Indicator (IVSI)</td><td colspan="2">M IFR and/or Offshore</td><td>M Offshore</td></tr>
<tr><td>Radio altimeter with audio/visual alert with analogue display (9)</td><td rowspan="2">M IFR and/or Offshore</td><td>MLT/R</td><td>M Offshore</td></tr>
<tr><td>Weather radar with colour screen (min. scale 2.5nm)</td><td>N/R VFR (7)</td><td>-</td></tr>
<tr><td>Public Address/intercom (PA) system</td><td colspan="2">M</td><td>M (4)</td></tr>
<tr><td>Loud hailer with externally mounted speaker</td><td>RLT (8)</td><td>M single pilot/R</td><td>MLT</td></tr>
<tr><td>CVR and/or FDR - as mandated by CAA</td><td colspan="2">RLT (required for HUMS and/or HOMP)</td><td>0</td></tr>
<tr><td>Enhanced Ground Proximity Warning System (EGPWS/TAWS) (2)</td><td colspan="3" rowspan="5">RLT</td></tr>
<tr><td>Health Usage Monitoring System (HUMS), or (2,10) (2)</td></tr>
<tr><td>Unit (Engine) Monitoring System (UMS), and with (2,10) (2)</td></tr>
<tr><td>Airframe/Engine Vibration Monitoring System (2)</td></tr>
<tr><td>Upper torso restraints, ALL seats (2)</td></tr>
<tr><td>2 First-Aid kits</td><td colspan="2" rowspan="2">M</td><td rowspan="2">1 each M</td></tr>
<tr><td>2 fire extinguishers with pressure gauges preferred</td></tr>
<tr><td>Raft(s), tethered to aircraft (6,8)</td><td colspan="2">M Offshore
2 rafts w/50% overload</td><td>Minimum 1 raft</td></tr>
<tr><td>Altitude Voice Alert Device (AVAD) (2)</td><td colspan="2">RLT</td><td rowspan="2">0</td></tr>
<tr><td>Emergency Exit Lighting System (2)</td><td colspan="2">M Night Offshore/R
RLT Offshore</td></tr>
<tr><td>External mounted life rafts (2)</td><td colspan="3" rowspan="6">M Offshore</td></tr>
<tr><td>Aircraft flotation equipment</td></tr>
<tr><td>Passenger life-vests, constant wear (1,6)</td></tr>
<tr><td>Emergency pop-out window (2)</td></tr>
<tr><td>Life-raft emergency radio/beacon/transponder (5,6)</td></tr>
<tr><td>Sonar transmitter (pinger) (5,6)</td></tr>
<tr><td>Pilot vest with voice capability emergency radio (1,5)</td><td colspan="3">M Offshore & Remote areas</td></tr>
<tr><td>Auto-inflation of fuselage floats (2)</td><td colspan="3" rowspan="2">RLT Offshore
MLT Offshore/R</td></tr>
<tr><td>Search & Rescue Transponder (SART) beacon</td></tr>
</table>

Equipment	Multi-Engine 10 or more passengers	Multi-Engine 9 or fewer passengers	Single-Engine Helicopters
Approved immersion suits - crew/passengers	Offshore - M if required by CAA, R - if analysis justifies M for All appropriate for environment		
Survival equipment	M for All appropriate for environment		
Collision avoidance system - TCAS - active interrogating only (if certified)	RLT for All in High Density Area, with no radar		
High-visibility pulse lights			
Mirrors for external situation awareness	M (if available) to improve situational awareness outside aircraft		
Heating for cabin	MLT for temperatures below 15°C/R		
Litter kit, cargo hook, hoist, Aux. fuel	O (8)		

M = Minimum	LT = Long Term (1 year+)	R = Recommended	N/R = Not Required	O = Optional

Notes:

1) *Where TSO approved and available life vests with crotch strap design preferred.*
2) *When an approved modification exists for the a/c type and it is recommended by Company Aviation Advisory personnel.*
3) *All night flights SHOULD be flown with multi-engine equipped for IFR flight, using IFR flight procedures & dual pilot.*
4) *Should have means of communication with passenger compartment, may be a phone type system.*
5) *Sonar pinger/ELT direction finding (homing) devices should be available in the country of operation, if not specify in contract specs. 406 MHz ELT/beacon/radios are preferred where registration is possible.*
6) *Life rafts should be reversible or self-righting.*
7) *When flown IFR, these items are mandatory.*
8) *Optional items are added based on role specific mission requirements.*
9) *Dual display required for dual pilot or IFR operations long term and AVAD (Automatic Voice Alert Device)*
10) *HUMs reference is CAP 693 or equivalent, and UMS is contained in an appendix to JAR Ops 3.517(a) - para (b) (5) or equivalent.*

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Appendix 8 Heliportable land seismic operations

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Appendix 9 Contents

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Appendix 9
Winching (hoisting) operations

In offshore operations personnel transfers are often achieved by helicopter, as is the case for a limited number of onshore scenarios. Winching of personnel can result in additional risks and should only be made after analysis of the hazards. Transfers should be restricted to daylight hours, but this is not always practicable.

A9.1 Personnel transfer by winch

The transfer of personnel by winch can generally be divided into two categories:

1) **Crew change transfers**
   Winching personnel to/from vessels by helicopter for crew changes or other associated routine vessel activities will be conducted in accordance with the International Chamber of Shipping (ICS) Guide to Helicopter/Ship.
   Each Operator undertaking winching operations for an OGP Member shall ensure that vessel personnel involved in the operation are cognizant of the procedures contained in the ICS guide.
2) **Emergency winching**
   Emergency winching of personnel via helicopters should be performed using the guidelines in the approved Operations Manual.
   Night emergency winching should not be conducted unless the helicopter is properly equipped with items such as auto-hover and the crew (including hoist operator) is trained and current as outlined in their company Operations/Training Manual (see Operational Procedures below).

A9.2 Helicopter performance

For all winching operations, the Operator will use twin-engine helicopters capable of Hover Out of Ground Effect, One Engine Inoperative, (HOGE OEI) for the atmospheric conditions that exist at the time winching is conducted. Exceptions may be considered only in life threatening emergencies and training if:

a) authorized by the local CAA;
b) the Operator has established alternative crew actions for an engine failure that minimizes the risk to occupants, personnel on the vessel, and on the winch line;
c) each person onboard the aircraft is in agreement to conduct the operation; and
d) the vessel or facility has been notified and agreed to the conditions.

In calculating performance limitations for HOGE OEI, no credit should be taken for forecast wind unless it exceeds 10 knots, in which case 50% of the forecast wind may be taken into account. Calculations must include the weight on the winch and the person being winched.

A9.3 Operational procedures

The helicopter should have an approved Flight Manual Supplement outlining the operation, limitations, and emergency procedures of the helicopter and hoist during hoisting operations.

The helicopter operator should have an approved Helicopter/Ship Operations Manual or Operations Manual Supplement outlining the following:

a) responsibilities of crew members;
b) equipment standards;
c) pre-flight responsibilities;
d) weather limitations;

e) communications;
f) procedures at winching area;
g) approach and departure procedures; and
h) emergency procedures.

A9.4 Personnel (pilots & winch operator) guidelines

A9.4.1 Training programmes

The Operator will establish a written training programme and minimum qualification criteria for hoist or winching operations. The programme will cover items 'a' through 'h' in the preceding paragraph.

All personnel (pilots and hoist operator) should have an initial competence course and thereafter an annual refresher.

Training records should be maintained as outlined in the winch training programme.

Training programmes are also recommended for vessel/offshore structure crews who may be involved in winching operations.

A9.4.2 Minimum crew

Winching operations should be conducted with two pilots and one hoist operator.

A9.4.3 Training & experience levels

Requirements for pilots and winch operators/crewmen are detailed in Section 8.1.10 and Appendix 5.

A9.4.4 Passengers

Passengers must receive a full emergency briefing, including the wearing of and use of survival equipment, prior to a flight. If the transfer involves winching then the briefing must also include practice with donning and using the lifting strop, as well as other winching procedures and crew signals. Practice can normally be carried out on the ground with the aircraft shut down.

A9.5 Required equipment standards

A9.5.1 Minimum equipment

The minimum equipment should consist of the following in additional to the items required for offshore flight:

a) emergency cable-cutters (not bolt-cutters) to backup the electrically activated cutters;
b) safety harness for winchman or other assistant;
c) static discharge equipment (as necessary);
d) lifting device or basket;
e) leather gloves; and
f) harness-cutting knife (protected edge).

A9.5.2 Maintenance

Hoists and all associated equipment should be maintained as prescribed in the Operators approved maintenance programme. The following requirements should be complied with:

a) technical logs should be maintained for all winches and lifting devices to record all hoist cycles and maintenance performed;

b) time and/or cycle life limits should be established for the cable and cable-cutting squibs;

c) all bulletins, notices, and directives or maintenance programmes published by the manufacturer of the airframe and the hoist should be on hand and incorporated into the overall maintenance programme as appropriate;

d) all lifting devices (baskets, straps, personnel harnesses, personnel lifting devices, and any ancillary associated lifting equipment) that attach to the hoist cable should also be included in the maintenance programme.

e) electrical hoist assemblies that do not have specified bonding tests and parameters should have the electrical bonding tested as follows:

   i) test the electrical bonding between all adjacent component parts of the hoist assembly, including, but not limited to, control box, electric motor casing, hoist body, hoist arm and attachment bracket, and between the hoist assembly and the aircraft. The maximum permitted resistance is 0.010 OHM, using a bonding tester capable of resolving to 0.002 OHM;

   ii) testing is to be completed every 24 months, or more frequently depending on frequency of installation and use; and

   iii) results of testing should be recorded in the aircraft maintenance log.

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Appendix 10 Airborne geophysical survey

OGP strongly encourages all operators engaged in geophysical flying operations to become members of the International Airborne Geophysics Safety Association (IAGSA). The charter of IAGSA includes the promotion of safer operating practices within the airborne geophysical industry and further provides an open forum for discussion within industry. Substantial compliance with IAGSA's standards and OGP recommended practices should be a requirement of any operator contracted for geophysical survey flying.

AI0.1 Risk analysis

A risk analysis is to be provided by the aircraft operator prior to the commencement of any geophysical survey for OGP member companies. The analysis is to demonstrate satisfactory performance margins related to the topographical area of operations, discuss minimum speeds and heights to be used and provide an insight to all perceived areas of risk. IAGSA provides a comprehensive risk assessment tool specifically for geophysical survey purposes; the satisfactory review of which would satisfy the OGP requirement in this respect.

AI0.2 Aircraft equipment standards

All non-standard modifications fitted to the aircraft are to be certified by the relevant aviation regulatory authority and be acceptable to the OGP Member's Aviation Advisors.

In addition to regulatory minimum instrument standards, the aircraft must possess the following serviceable equipment:

- Radar altimeter.
- Head up track and height guidance.
- TSO C126 ELT or equivalent.
- Shoulder harness for all occupants.
- Clear, unscratched and serviceable canopy.
- Appropriate securing mechanism for additional instrumentation (GPS/CDI).
- Survival pack suited to the operating environment.

AI0.3 Personal equipment standards

Personnel involved in geophysical flying operations must wear appropriate clothing. All occupants of an aircraft conducting geophysical flying must have as a minimum:

- Flying helmet meeting industry safety standards.
- Non-synthetic or fire blocked/retardant trousers and shirt.
- Cotton undergarments.
- Robust shoes.
- Life jackets (and immersion suits depending on water temperatures) – if flight is outside safe auto-rotative/gliding distance from land.
- Personal emergency locator beacon.

AI0.4 Minimum crew

A pilot and geophysical operator is the minimum acceptable crew for airborne geophysical surveys. Single crew operations (i.e. the pilot as the sole occupant) are not permitted unless survey equipment can be operated automatically without significant inputs from the pilot during flight.

AI0.5 General pilot experience

The following experience requirements are generic to both fixed and rotary wing operations above and below 5,700 kg (12,500 lbs). Each requirement should be satisfied in addition to the specific pilot experience requirements detailed in Section 4.3 of this guide and summarised in Appendix 5.

Captain

Successful completion of a geophysical training programmeincluding, where applicable, a mountain flying course:

- 300 hours experience in airborne geophysical operations (including 100 hours in Command or In-Command-Under-Supervision);
- 50 hours Command (or ICUS) on geophysical survey in the contract aircraft type;
- 10 hours Command (or ICUS) in the contract aircraft type conducting geophysical operations within the preceding 90 days, or successful completion of a geophysical line check of at least two hours (excluding ferry time) within the preceding 90 days.

Co-Pilot (if carried)

Successful completion of geophysical training programme including, where applicable, a mountain flying course:

- 10 hours on low level survey operations;
- Manipulation of the flight controls at survey height by a co-pilot will be restricted to those flights where the aircraft captain is an approved check and training or supervisory captain.

AI0.6 Pilot flight & duty times

Due to the fatiguing nature of geophysical flying the following flight hour limitations are to be observed:

Single Pilot Operations

- 5 hours per day on actual survey (transit time excluded);
- 34 hours in any consecutive 7 days (inclusive of transit time);
- overall 28 day limits as specified in Section 5.6 of this guide;
- a minimum of 24 consecutive hours free of duty during any seven consecutive days.

Two Pilot Operations

- 7 hours per day on actual survey (transit time excluded);
- 34 hours in any consecutive 7 days (inclusive of transit time);
- overall 28 day limits as specified in Section 5.6 of this guide;
- in addition to the above limitations, aircraft crews operating internationally must comply with flight and duty limitations of the country in which they are operating if so required by that country's aviation regulatory authority.

AI0.7 Minimum survey height

The following IAGSA guidance is to be adhered to:

The maximum clearance height possible should be specified consistent with the objectives of the survey to be flown. If a survey is to be flown at less than 100m (328 ft) it should be flown after conducting a detailed risk analysis in accordance with an internationally recognised procedure such as the IAGSA risk analysis procedure referred to above, considering, but not limited to:

- terrain relief and vegetation;
- aircraft type;

- aircrew flight and duty times;
- prevailing weather conditions;
- anticipated density altitude;
- pilot experience and recency;
- planned flight speed.

AI0.8 Minimum Survey Speed

For each fixed-wing aircraft type, the minimum safe survey speed is calculated to be the greater of:

- 130% of clean stall speed (Vs);
- 110% of best single-engine rate of climb speed (Vyse, if applicable); and
- minimum safe single-engine speed (Vsse, if published).

This minimum survey speed is to be observed even after "zoom" climbs and should be raised as necessary to account for local conditions such as turbulence and gusty winds.

AI0.9 SAR Coverage

All aircraft engaged in geophysical operations are to be in radio contact with an appropriate organisation holding Search & Rescue (SAR) responsibility. The utilisation of a satellite/VHF automatic flight-following system overcomes many of the difficulties and limitations associated with conventional radio communications. A SAR plan is to be established, and daily SAR briefings are to be given prior to any flying activity. The following is to be used as the framework for SAR planning:

Base-camp holding SAR for aircraft on survey

A comprehensive radio net is to be established between the base-camp and the aircraft on survey for the duration of the exercise. Where terrain or geophysical equipment prevent constant radio contact, provision is to be made for "ops normal" calls every 30 minutes. In the event that flying a line is greater than 30 minutes in duration the call is to be made at the completion of each line.

Local flight service holding SAR for aircraft on survey

Liaison between the operator and flight service responsible for that area should outline the intended area of operations, SAR times, and methods by which position reports may be given. Details of the ground party supporting the operation, and methods by which they may be contacted, should be registered with flight service prior to the operation.

AI0.10 Minimum fuel reserves

A minimum fixed fuel reserve of 30 minutes flying time at cruise consumption rate is required for all survey operations. If, during deployment to and from the survey area a fixed-wing aircraft is flown under IFR conditions, a variable reserve of 10% is to be added to the fixed fuel reserve. Where the local regulatory authority requires higher reserves these amounts are to be used.

AI0.11 Fuel quality & procedures

Portable refuelling units used with bladder or drum stock are to be fitted with Go/No-Go filters. Water detector paste is to be used to test AVGAS from drum stock, and Shell Water Detector Capsules used for Jet A-1.

Storage control, purity control, grounding/earthing systems and security of fuel supply must be considered in fuel planning.

Rotors running refuelling for helicopters should comply with the requirements of Section 5.8 of this guide.

A10.12 Helicopter procedures

It should be noted that standards andprocedures for helicopters involved in geophysical work follow those laid down for fixed-wing above.

Appendix 11 Contents

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Appendix II Aerial pipeline inspection

AII.1 General

In most countries periodic inspections of product pipelines are a requirement of national legislation, although the owner will usually wish to carry out inspections regardless of legislation. As well as checking for any signs of a leak from or damage to a pipeline, the inspection is to check that there is no danger to the integrity of the line from nearby construction or drainage work. The use of helicopters or fixed-wing aircraft is often the most effective way of achieving the task. Additional hazards are introduced by the need to operate at an altitude which is lower than optimum for normal operations. These hazards can be managed by complying with the following guidance.

AII.2 General guidelines

a) Weather.
   i) All aerial survey/pipeline patrol operations should normally be conducted under Day Visual Flight Rules (VFR) conditions.
   ii) Minimum weather for Day VFR of 700-foot ceilings and 3 miles visibility.

b) Oil spill surveillance and other aerial surveillance operations using specialized IR/UV cameras may be conducted at night if all requirements for night flight (Appendix 5) are met.

c) Operations should be conducted at no less than the minimum safe altitude stipulated by regulation or authorized by the local CAA (see item 11 below).

d) Helicopters, when used, should not be operated within the avoid area of the height/velocity curve, as published in the helicopter's approved flight manual, except during landing and takeoff.

AII.3 Single-engine aircraft

The use of a single-engine aircraft may offer some advantages for manoeuvrability and visibility. However, there are conditions that should be considered when making the decision on whether a single-engine aircraft would offer an acceptable risk. Those conditions are generally: terrain; availability of safe landing area along the route to be flown; and ready access to professional search and rescue support (See Appendix 6 - weather planning document). When operating with a single-engine aircraft the following provisions must be in place and monitored for compliance:

a) The terrain must be such that a safe forced landing may be achieved in the event of a power failure, which means that there should be a potential for limited damage to the aircraft and injury to occupants.

b) Flights should be conducted at not less than 500 feet AGL cruising altitude and at a speed and height combination such that, in the event of a power failure, a safe forced landing can be made.

AII.4 Aircraft configuration

For long-term pipeline patrol operations, the following should be installed:

a) Collision avoidance systems with active transponder interrogation, providing verbal and/or visual positional data on the target aircraft in high density areas or where other low level traffic may present a hazard.

b) Automated engine monitoring systems for all single-engine aircraft.

c) Landing lights converted to pulse light configuration (for aeroplanes wing tip pulse lights) in high-density areas.

d) Climate controlled cabin for all operations in temperatures below 15°C and for long-term operations where temperatures are routinely above 32°C.

e) Survival kits should include a portable emergency beacon/radio (EPIRB).

f) High Intensity Strobe Lights (HISL)/pulse or forward recognition lights should be fitted to the aircraft.

g) The aircraft should be painted in a high visibility paint scheme with appropriate markings.

h) The operator should be encouraged to fit High Visibility Blades for helicopters if approved for the model.

i) Radar Altimeter (Radalt) with audio and visual alert or Automatic Voice Alerting Device (AVAD), where available for the aircraft model, is recommended to ensure that the selected height AGL is maintained.

j) Obstruction avoidance equipment/software to provide an active indication of cell towers, antennas, wires, buildings, terrain, *etc*. when available for the aircraft model should be considered.

AII.5 Aircraft maintenance for long-term operations

a) Where continuous airworthiness programmes have been published by the manufacturer, aircraft should be maintained in accordance with those programmes.

b) Engine trend monitoring programmes should be implemented for all single-engine aircraft. In the absence of other guidance, a programme similar to that described in FAA Advisory Circular 20-105B should be considered.

AII.6 General pilot requirements

The need for a qualified pilot is extremely important. The following should be considered when selecting for a pipeline contract:

a) The basic operation of pipeline patrol requires a division of attention between flying the aircraft, looking for traffic and observing the pipeline right of way. It is not the best place to use low-time pilots.

b) Patrol pilots may fly long hours often as a single pilot. The pilot should have a history of following all rules, and be self-motivated.

c) Pilots must have a strong working knowledge of route terrain, and have a good understanding of local weather conditions.

d) Each Operator should establish the procedures to be used by the aircrew in the performance of their duties to include but not limited to cockpit procedures and crew responsibilities.

e) Each Operator should establish a 'sterile cockpit' rule covering as a minimum: key altitudes/flight phases, restriction of unnecessary conversation and paperwork.

AII.7 Pipeline patrol specific pilot role experience

In addition to experience requirements contained in Appendix 5 the following requirements are recommended for all aircrew:

a) Successful completion of a pipeline route check for the route to be flown (unless for a newly established route).

b) Basic instrument experience.

c) 50 hours in command patrol survey time in the previous six months.

d) 10 hours on the contract aircraft type conducting pipeline operations within the preceding 90 days, or successful completion of a pipeline line check within the preceding 90 days.

AII.8 Pilot flight & duty times maximums

The pilot flight and duty time limitations described in Section 5.6 of this guide should be applied.

AII.9 Collision avoidance

There is an increased likelihood of traffic confliction with military low-level traffic; power line inspection flights; aerial work and private flying activity, often beneath ATC radio coverage. The following measures have been shown to alleviate the hazards:

a) Collision avoidance equipment described in the 'aircraft configuration' section above.
b) An optimum operating height should be maintained at 500 feet AGL or higher.
c) Every effort must be made to co-ordinate with other airspace users through a notification system.

SSR Transponders should always be turned on even if operating outside controlled airspace or in remote areas. Other aircraft which may be operating in the low level environment, for example military fast jets, are typically equipped with collision avoidance equipment that relies on detecting transponder signals from potentially conflicting aircraft.

AII.10 Passengers – crew members

Passengers should normally not be carried during aerial surveillance operations, unless they are performing work related to the flight. In such cases they should be considered 'crew members', if not in contravention to local regulations. The following guidelines will be followed:

a) The crew members will be briefed on their responsibilities by the pilot.
b) The pilot-briefing, in addition to the items noted in Section 9.5 of this guide will include as a minimum the items below:
    i) Primary responsibility of the crewmember is to act as an observer.
    ii) The crewmember when not occupied with survey duties will maintain visual surveillance for hazards and advise the pilot accordingly.
    iii) A map briefing pointing out all known hazards.
    iv) The minimum altitude for the flight.

It is recommended that for long-term pipeline patrol operations using single pilot aircraft, where daily flight times exceed 2 hours, a dedicated observer is onboard the flights. A dedicated observer should also be used when times are less than 2 hours if a portion of the patrol includes flight over or near large cities, and/or includes flight in congested airspace. These observers should receive appropriate initial and recurrent training following a written curriculum with appropriate testing. Recommended subjects include duties, responsibilities, observation techniques, and radio procedures.

AII.11 Exemptions

In most countries pipeline inspections occur below normal minimum operating altitudes, especially in the case of helicopters, and it will be necessary for the operator to obtain an exemption from the regulatory authority to conduct low-level operations. If exemptions are not in place then the client and operator may be subject to liability in the event of an accident or complaint regarding aircraft noise.

AII.12 Inadvertent entry into cloud

The types of aircraft used will often be equipped for VFR operations only and pilots may have limited experience in flying under IFR. It is therefore recommended, where allowed by local authority, that procedures following inadvertent cloud entry should be included in the Operations Manual and practised during pilots' base checks.

AII.13 Flight following

It is likely that pipeline inspection aircraft will be below radio coverage for a significant proportion of the time. Special procedures should therefore be in place to ensure that position reporting is achieved (ideally every 15 minutes). This may involve the use of HF to base, periodic climbs to a higher altitude to achieve VHF contact or the use of VHF FM to speak to pumping or service stations along the route or installation of automated satellite flight following systems. Emergency response procedures should be tested periodically to ensure that flight following arrangements are effective in the event of an overdue radio call or missing aircraft. The use of advanced satellite flight following technology that would allow the tracking of flights at a base station is highly recommended. In addition to the above comments it must be clear that the contracting OGP Member Company is responsible for flight following, and must either have the capability to perform this or have it as a contract requirement.

AII.14 Flights over urban areas

Pipelines running through urban areas should wherever possible be inspected from the ground. Where aerial inspection is essential it should be conducted at a minimum altitude approved by local civil aviation authorities.

When operating single-engine aircraft, or multi-engine aircraft unable to sustain flight on one engine, pilots will select a flight path that provides a safe emergency landing area, avoids damage to third parties or facilities on the ground and that provides opportunity for a safe emergency landing.

Operators will designate the preferred flight-path to be used if flights are conducted routinely over the same congested area.

AII.15 Landings en-route (helicopters only)

During the flight the observer will take a note of construction work, or any other activity near the pipeline which could affect its integrity, and will report events to the pipeline owner to follow up on the ground. However, if he judges that urgent action is required (for example, a trench converging on the pipeline) he may request the pilot to land nearby so that he can talk to persons on-site. The operator should therefore have a section in his Operations Manual on unplanned landings to include guidance on the justification for such a landing, landing site selection, informing base or ATC of the intention to land, and recording the event. Pilot training and line-checking should include unplanned landing procedures.

Appendix 12 Contents

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Appendix 12 Helicopters as a secondary Search & Rescue task

AI2.1 Introduction

This guidance is intended to cover SAR as a secondary task to the offshore support contract and is appropriate to over water operations only. It is not intended to cover contracted public transport Helicopter Hoist Operations (HHO) e.g. marine pilot transfer, or to cover specialist primary SAR. The threshold between primary SAR and SAR as a secondary task is likely to occur when there is a requirement identified to conduct HHO from a life-raft at night, this normally being considered as a primary SAR task. Additionally, consideration should be given to specialist primary SAR when hoisting out of sight of land, in poor weather or in high sea states.

Additional information relating to Search & Rescue can be found in Section 12 - Emergency response planning and Appendix 9 Winching (hoisting) operations of this guide.

AI2.2 Management

Comprehensive guidance on the planning and co-ordination of SAR services is available in the International Aeronautical and Maritime Search and Rescue (IAMSAR) Manual (IMO/ICAO Doc 9731-AN/958). Volume 2 (mission co-ordination) of this manual is focused on planning and co-ordination of SAR operations and exercises.

Where secondary SAR is tasked, the scope of the SAR cover should be clearly defined and include radius of action and time on task, whether daytime only or night and day, and minimum weather, including sea state and maximum wind. The oil company should include a comprehensive SAR plan within its emergency response plans. There should also be a clearly defined interface between the emergency response organization of the oil company and that of the helicopter operator. The oil company will need to define:

- an SAR authorization process, including authorities to request call out; and
- an 'authorization to launch' process.

SAR as a secondary task to the contract will normally have been generated following a structured risk assessment of passenger survivability within the context of national or regional SAR capabilities. While individual oil companies would normally provide their own guidance on risk assessment, background guidance on survivability can be found in the Transport Canada TP13822E – 'Survival in Cold Waters' (web site: http://www.tc.gc.ca/marinesafety/TP/Tp13822/menu.htm). The risk assessment should also include the survivor drop-off points (e.g. daytime use only or lit at nights) and the decision-making process for different types of injury.

Any helicopter operator contracted to provide secondary SAR will normally have experience in the provision of primary SAR services to national SAR agencies. Such operators would normally employ an SAR Standards Manager with past civil or military SAR experience.

AI2.3 Operating standards

A12.3.1 Operations manual

Operators carrying out SAR as a secondary task should hold an approved Operations Manual which includes supplements containing material specific to helicopter hoist operations and SAR tasking. In particular the supplements should address:

- Details about the system to de-conflict airspace and communicate with other SAR assets.
- Crew qualifications (to include offshore experience and Instrument Rating).
- Crew training (to include proficiency and line-check requirements).
- Duties and responsibilities.

- Pre-flight preparation and briefing.
- Minimum HHO equipment.
- AEO and OEI performance criteria.
- If required, the conditions under which offshore HHO transfer may be conducted including the relevant limitations on vessel movement and wind speed.
- The criteria for determining the minimum size of the HHO site - appropriate to the task.
- Fuel planning.
- Search procedures.
- HHO transfers both onshore and offshore.
- Radio communications.
- Visual communications.
- Standard hoist procedures – to include minimizing height above solid surfaces in the event of hoist emergencies.
- Hoist emergency procedures, including intercom failure, hoist failure, hoist runaway and cable cutting.
- Hoist operators instructions.
- Winchman instructions.
- Air deployment of life rafts, including HERDS.
- Call-out priority definitions.
- SAR response criteria.
- Weather minima, to include differences for non auto-hover capability.
- Conduct of SAR missions.
- Specialist equipment.
- The method by which crew members record hoist cycles.

When required, relevant extracts from the Operations Manual supplements should be made available to the organization for which the HHO is being provided.

A12.3.2 Crew composition

The minimum crew for HHO should be as stated in the Operations Manual supplement. It will depend on the type of helicopter, the weather conditions, the type of task and, in addition for offshore operations, the HHO site environment, the sea state and the movement of the vessel. In no case should the crew be less than two pilots, one HHO hoist operator and one winchman.

AI2.4 Aircraft & equipment fit

Only twin-engine helicopters, with a single-engine HOGE capability during training to public transport standards should be used for the rescue element of SAR tasks. This HOGE training requirement is mandated by some regulatory authorities but does not preclude lesser OEI performance at higher weights during actual SAR. Aircraft should be equipped for standard offshore IFR operations. Additionally, aircraft equipment should include:

- Hoist and hoist fittings allowing hoist operation from a location at the cabin door.
- GPS.
- Radio altimeter.
- Marine Band Radio.
- Radar with search and beacon modes.
- DF homing capability.
- The following optional equipment:
  - approved stretcher fit;

  - 4-axis autopilot;
  - auto-hover capability;
  - searchlight.

Maintenance instructions for HHO systems must be established by the operator in liaison with the manufacturer, and included in the operator's helicopter maintenance programme. The installation of all helicopter hoist equipment including any subsequent modifications and, where appropriate, its operation must have an airworthiness approval appropriate to the intended function. Ancillary equipment must be designed and tested to the appropriate standard and acceptable to the authority.

AI2.5 SAR equipment

Minimum equipment requirements should include the following:

- Sea tray fit (floor protection).
- Air transportable rescue equipment pack (generally held on a mobile trolley at base). This would normally include such items as:
  - hoist operator and winchman harnesses, including quick release belt;
  - lifting strops;
  - protective helmets;
  - winching gloves;
  - knee pads;
  - earthing wire;
  - hooks and grapples;
  - manual cable cutter;
  - immersion suits;
  - stretchers;
  - hi-lines (optional);
  - emergency hoists (Heave-Ho) (optional);
  - cable break plate (optional);
  - grabbit hook (optional).
- Air deployable life-raft (SAR raft or HERDS) (optional).

AI2.6 Aircrew

A12.6.1 Experience & competence

The Operations Manual should contain criteria for the selection of flight crew members for the HHO task, taking previous experience into account. The minimum experience level for pilots conducting HHO flights shall not be less than the National regulatory requirement for public transport category hoist operations. Where such guidance is not available, the following is recommended for Pilots in Command:

- 1,000 hours pilot in-command of helicopters or 1000 hours as co-pilot in HHO operations of which 200 hours is as pilot-in-command under supervision.
- Successful completion of written and practical training in accordance with the procedures contained in the Operations Manual and relevant experience in the role and environment under which HHO are conducted.
- 50 hoist cycles conducted offshore.
- A valid HHO proficiency check.
- A valid HHO line check.

In addition, the following previous experience is desirable:

- Military or civil SAR.
- Mountain flying and external load operations.

A12.6.2 Recent operating experience

All pilots conducting HHO should have completed in the last 90 days a minimum of 3 hoist circuits, which should include a transition to and from the hover and 3 wet lifts within that 90-day period.

A12.6.3 Training & checking

The flight-crew member should be trained in the following subjects:

- Fitting and use of the hoist.
- Preparing the helicopter and hoist equipment for HHO.
- Normal and emergency hoist procedures.
- Crew co-ordination concept specific to HHO.
- Practice of HHO procedures.
- The dangers of static electricity discharge.

Proficiency checks should include procedures likely to be used at HHO sites with special emphasis on:

- Local area meteorology.
- HHO flight planning.
- HHO departures.
- A transition to and from the hover at the target location.
- Normal and simulated emergency HHO procedures.
- Crew co-ordination and, in particular, good communication (standard patter).

AI2.7 SAR crew

A12.7.1 Experience & competence

Past operational SAR experience is highly desirable. As a minimum for competence, the following is recommended for SAR crew members (hoist operator and winchman):

- Successful completion of training in accordance with the procedures contained in the Operations Manual and relevant experience in the role and environment under which HHO are conducted.
- 50 hoist cycles conducted offshore.
- A valid HHO role check.
- A valid HHO line check.

A12.7.2 Recent operating experience

All HHO crew members, both Hoist Operator and Winchman, should have completed in the last 60 days a minimum of 6 simulated or actual hoist cycles and a minimum of 2 simulated hoist emergencies.

A12.7.3 Training & checking

The HHO crew member should be trained in accordance with the following:

- Duties in the HHO role.
- Fitting and use of the hoist, with support from qualified maintenance staff, as appropriate.
- Operation of hoist equipment.
- Preparing the helicopter and specialist equipment for HHO.

- Normal and emergency procedures.
- Crew co-ordination concepts specific to HHO.
- Operation of intercommunications and radio equipment.
- Knowledge of emergency hoist equipment.
- Techniques for handling HHO passengers.
- Effect of the movement of personnel on the centre of gravity and mass during HHO.
- Effect of the movement of personnel on performance during normal and emergency flight conditions.
- Techniques for guiding pilots over HHO sites.
- Awareness of specific dangers relating to the operating environment.
- The dangers of static electricity discharge.

Intentionally Blank

What is OGP?

The International Association of Oil & Gas Producers encompasses the world's leading private and state-owned oil & gas companies, their national and regional associations, and major upstream contractors and suppliers.

Vision

- To work on behalf of all the world's upstream companies to promote responsible and profitable operations.

Mission

- To represent the interests of the upstream industry to international regulatory and legislative bodies.
- To achieve continuous improvement in safety, health and environmental performance and in the engineering and operation of upstream ventures.
- To promote awareness of Corporate Social Responsibility issues within the industry and among stakeholders.

Objectives

- To improve understanding of the upstream oil and gas industry, its achievements and challenges and its views on pertinent issues.
- To encourage international regulators and other parties to take account of the industry's views in developing proposals that are effective and workable.
- To become a more visible, accessible and effective source of information about the global industry, both externally and within member organisations.
- To develop and disseminate best practices in safety, health and environmental performance and the engineering and operation of upstream ventures.
- To improve the collection, analysis and dissemination of safety, health and environmental performance data.
- To provide a forum for sharing experience and debating emerging issues.
- To enhance the industry's ability to influence by increasing the size and diversity of the membership.
- To liaise with other industry associations to ensure consistent and effective approaches to common issues.

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