CAR OPS 3

COMMERCIAL AIR TRANSPORTATION (HELICOPTER)

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FOREWORD

1. The Republic of San Marino Civil Aviation Authority, known in these regulations as the "Authority" has implemented CAR OPS 3 (Civil Aviation Regulations – Operations Helicopter) as the technical requirements and administrative procedures applicable to commercial transportation by helicopter.

2. [CAR OPS 3 is known in these regulations as OPS 3 and includes Standards and Recommended Practices up to and including ICAO Annex 6, Part III, Amendment 27.]

3. The Authority has adopted associated compliance or advisory circulars wherever possible and, unless specifically stated otherwise, clarification will be based on this material or other internationally acceptable documentation.

4. Unless otherwise stated, applicable CAR DEF definitions and abbreviations are used throughout this document.

5. The editing practices used in this document are as follows:

   (a) 'Shall' or 'Will' is used to indicate a mandatory requirement.

   (b) 'Should' is used to indicate a recommendation.

   (c) 'May' is used to indicate discretion by the Authority, the industry or the applicant, as appropriate.

   Note: The use of the male gender implies the female gender and vice versa.

6. The phrase "acceptable to the Authority" has been used throughout these regulations and acceptability shall be determined by the operator procedures specified in the operations manual.

7. Paragraphs and sub-paragraphs with new, amended and corrected text will be enclosed within square brackets until a subsequent "amendment" is issued.

8. Section 1 regulations are presented in "Times Roman" font and Section 2 guidance material is presented in "Arial" font.

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SUBPART A

APPLICABILITY

OPS 3.001 Applicability

(See Appendix 1 to OPS 3.001)

OPS 3 prescribes requirements applicable to the operation of any civil helicopter for the purpose of commercial air transportation by any operator whose principal place of business is in San Marino and that operator has been issued an Aircraft Operating Licence as the economic authority. CAR OPS 3 does not apply to;

(a) helicopters when used in military, customs and police services;

(b) parachute dropping and firefighting flights, and to associated positioning and return flights in which the only persons carried are those who would normally be carried on parachute dropping or firefighting flights; nor

(c) flights immediately before, during, or immediately after an aerial work activity not included in OPS 3.003(b) provided these flights are connected with that aerial work activity and in which, excluding crew members, no more than 6 persons indispensable to the aerial work activity are carried.

SUBPART B

GENERAL

OPS 3.005 General

(a) The operator shall not operate a helicopter for the purpose of commercial air transportation other than in accordance with OPS 3.

(b) The operator shall comply with the requirements in Subpart M applicable to helicopters operated for the purpose of commercial air transportation.

(c) Each helicopter shall be operated in compliance with the terms of its Certificate of Airworthiness and within the approved limitations contained in its Helicopter Flight Manual. (See Appendix 1 to OPS 3.005(c).)

(d) Helicopter Emergency Medical Service (HEMS) operations shall be conducted in accordance with the requirements contained in OPS 3 except for the variations contained in Appendix 1 to OPS 3.005(d) for which a specific approval is required.

(e) Helicopter operations over a hostile environment located outside a congested area shall be conducted in accordance with the requirements contained in OPS 3 except for the variations contained in Appendix 1 to OPS 3.005(e) for which a specific approval is required. This Appendix does not apply to operations conducted in accordance with Appendix 1 to OPS 3.005(d).

(f) Operations with helicopters with a maximum certificated take-off mass (MCTOM) of 3175 kg or less; with a maximum approved passenger seating configuration (MAPSC) of 9 or less; by day; and over routes navigated by reference to visual landmarks shall be conducted in accordance with the requirements contained in OPS 3 except for the variations contained in Appendix 1 to OPS 3.005(f) for which a specific approval is required.

(g) Operations with helicopters with a maximum certificated take-off mass (MCTOM) over 3175kg and a maximum approved passenger seating configuration (MAPSC) of 9 or less; by day; over routes navigated by reference to visual landmarks; and conducted within a local and defined geographical area acceptable to the Authority, which are intended to start and end at the same location (or at another location acceptable to the Authority within the local area) on the same day, shall be conducted in accordance with the requirements contained in OPS 3 except for the variations contained in Appendix 1 to OPS 3.005(g) for which a specific approval is required.

(h) Helicopter Hoist Operations shall be conducted in accordance with the requirements contained in OPS 3 except for the variations contained in Appendix 1 to OPS 3.005(h) for which a specific approval is required.

(i) Helicopter operations to/from a public interest site shall be conducted in accordance with the requirements contained in OPS 3 except for the variations contained in Appendix 1 to OPS 3.005 (i) for which a specific approval is required.

(j) Night VFR operations with the aid of Night Vision Imaging Systems (NVIS) shall only be conducted in accordance with OPS 3 and procedures contained in the Operations Manual for which a specific approval is required.

OPS 3.010 Exemptions

The Authority may exceptionally and temporarily grant an exemption from the provisions of OPS 3 when satisfied that there is a need and subject to compliance with any supplementary condition the Authority considers necessary in order to ensure an acceptable level of safety in the particular case.

OPS 3.015 Operational Directives

(a) The Authority may direct by means of an Operational Directive that an operation shall be prohibited, limited or subject to certain conditions, in the interests of safe operations.

(b) Operational Directives state:

(1) The reason for issue;

(2) Applicability and duration; and

(3) Action required by the operator(s).

(c) Operational Directives are supplementary to the provisions of CAR OPS 3.

OPS 3.020 Laws, Regulations and Procedures - Operator's Responsibilities

(a) The operator shall ensure that:

(1) All employees, when abroad, know that they shall comply with the laws, regulations and procedures of those States in which operations are conducted; and

(2) All pilots are familiar with the laws, regulations and procedures pertinent to the performance of their duties, prescribed for the areas to be traversed, the aerodromes/heliports to be used and the air navigation facilities relating thereto.

(3) Other members of the flight crew are familiar with such of these laws, regulations and procedures as are pertinent to the performance of their respective duties in the operation of the helicopter.

[OPS 3.023 Compliance by a Foreign Operator with Laws, Regulations and Procedures

(a) The Authority shall recognise as valid an air operator certificate issued by another Contracting State, provided that the requirements under which the certificate was issued are at least equal to the applicable Standards specified in ICAO Annex 6, Part III and in Annex 19.

(b) The Authority shall establish a programme with procedures for the surveillance of operations in their territory by a foreign operator and for taking appropriate action when necessary to preserve safety.

(c) The operator shall meet and maintain the requirements established by the States in which operations are conducted.

(d) When the Authority identifies a case of non-compliance or suspected non-compliance by a foreign operator with laws, regulations and procedures applicable within the territory of San Marino, or a similar serious safety issue with that operator, the Authority shall immediately notify the operator and, if the issue warrants it, the State of the Operator. Where the State of the Operator and the State of Registry are different, such notification shall also be made to the State of Registry, if the issue falls within the responsibilities of that State and warrants a notification.

(e) In the case of notification to States, if the issue and its resolution warrant it, the Authority shall engage in consultations with the State of the Operator and the State of Registry, as applicable, concerning the safety standards maintained by the operator.]

OPS 3.025 Common Language

(a) The operator shall ensure that flight crew members demonstrate the ability to speak and understand the language used for radiotelephony communications as specified in CAR LIC.

(b) The operator shall ensure that all operations personnel are able to understand the language in which those parts of the Operations Manual which pertain to their duties and responsibilities are written.

OPS 3.030 Minimum Equipment List - Operator's Responsibilities

(a) The operator shall establish, for each helicopter, a Minimum Equipment List (MEL) approved by the Authority. This shall be based upon, but no less restrictive than, the relevant Master Minimum Equipment List (MMEL) (if this exists) accepted by the Authority.

(b) The operator shall not operate a helicopter other than in accordance with the MEL unless permitted by the Authority. Any such permission will in no circumstances permit operation outside the constraints of the MMEL.

(c) Where the Authority is not the State of Registry, the Authority shall ensure that the MEL does not affect the helicopter's compliance with the airworthiness requirements applicable in the State of Registry.

OPS 3.035 Quality System

(a) The operator shall establish one Quality System and designate one Quality Manager to monitor compliance with, and the adequacy of, procedures required to ensure safe operational practices and airworthy helicopters. Compliance monitoring must include a feed-back system to the Accountable Manager to ensure corrective action as necessary.

(b) The Quality System must include a Quality Assurance Programme that contains procedures designed to verify that all operations are being conducted in accordance with all applicable requirements, standards and procedures.

(c) The Quality System and the Quality Manager must be acceptable to the Authority.

(d) The Quality System must be described in relevant documentation.

(e) Notwithstanding sub-paragraph (a) above, the Authority may accept the nomination of two Quality Managers, one for operations and one for maintenance, provided that the operator has designated one Quality Management Unit to ensure that the Quality System is applied uniformly throughout the entire operation. (See AMC OPS 3.035)

OPS 3.037 Safety Management System
[(See CAR SMS)]
(See AMC OPS 3.037)

The SMS of the operator shall;

(a) [be established in accordance with the framework elements contained in CAR SMS, Appendix 2;] and

(b) be commensurate with the size of the operator and the complexity of its aviation services.

(c) The SMS of a certified operator of helicopters authorised to conduct international commercial air transport, in accordance with these regulations, shall be made acceptable to the State of the Operator.

(d) The System shall include an occurrence reporting scheme to enable the collation and assessment of relevant incident and accident reports in order to identify adverse trends or to address deficiencies in the interests of flight safety. The scheme shall protect the identity of the reporter and include the possibility that reports may be submitted anonymously. (See AC OPS 3.037(c))

(e) The operator of a helicopter of a certified take-off mass in excess of 7 000 kg or having a passenger seating configuration of more than 9 and fitted with a flight data recorder shall establish and maintain a flight data analysis programme as part of its safety management system.

(f) The flight data analysis programme in paragraph (e) shall contain adequate safeguards to protect the source(s) of the data in accordance with the principles of Appendix 1 to OPS 3.161.
Note: The operator may contract the operation of a flight data analysis programme to another party while retaining overall responsibility for the maintenance of such a programme.

(g) The operator shall establish a flight safety documents system, for the use and guidance of operational personnel, as part of its safety management system.

OPS 3.040 Additional Crew Members

The operator shall ensure that crew members who are not required flight or cabin crew members, have also been trained in, and are proficient to perform, their assigned duties.

OPS 3.050 Search and Rescue Information

(a) [The operator shall ensure that pilots-in-command have available on board the helicopter all the essential information concerning search and rescue services in the area over which the helicopter will be flown.]

(b) All helicopters on all flights shall be equipped with the ground-air signal codes for search and rescue purposes.

OPS 3.055 Information on Emergency and Survival Equipment Carried

The operator shall ensure that there are available for immediate communication to rescue co-ordination centres, lists containing information on the emergency and survival equipment carried on board all of his helicopters. The information shall include, as applicable, the number, colour and type of life-rafts and pyrotechnics, details of emergency medical supplies, water supplies and the type and frequencies of emergency portable radio equipment.

OPS 3.065 Carriage of Weapons of War and Munitions of War
(See AMC OPS 3.065)

(a) The operator shall not transport weapons of war and munitions of war by air unless an approval to do so has been granted by all States concerned.

(b) The operator shall ensure that weapons of war and munitions of war are:

(1) Stowed in the helicopter in a place which is inaccessible to passengers during flight; and

(2) In the case of firearms, unloaded, unless, before the commencement of the flight, approval has been granted by all States concerned that such weapons of war and munitions of war may be carried in circumstances that differ in part or in total from those indicated in this sub-paragraph.

(c) The operator shall ensure that the commander is notified before a flight begins of the details and location on board the helicopter of any weapons of war and munitions of war intended to be carried.

OPS 3.070 Carriage of Sporting Weapons and Ammunition
(See AMC OPS 3.070)

(a) The operator shall take all reasonable measures to ensure that any sporting weapons intended to be carried by air are reported to him.

(b) The operator accepting the carriage of sporting weapons shall ensure that:

(1) They are stowed in the helicopter in a place which is inaccessible to passengers during flight unless the Authority has determined that compliance is impracticable and has accepted that other procedures might apply; and

(2) In the case of firearms or other weapons that can contain ammunition, unloaded.

(c) Ammunition for sporting weapons may be carried in passengers' checked baggage, subject to certain limitations, in accordance with the Technical Instructions (see OPS 3.1160(b)(5)) as defined in OPS 3.1150(a)(14).

OPS 3.075 Method of Carriage of Persons

(a) The operator shall take all reasonable measures to ensure that no person is in any part of a helicopter in flight which is not a part designed for the accommodation of persons unless temporary access has been granted by the commander to any part of the helicopter:

(1) For the purpose of taking action necessary for the safety of the helicopter or of any person, animal or goods therein; or

(2) In which cargo or stores are carried, being a part which is designed to enable a person to have access thereto while the helicopter is in flight.

OPS 3.080 Offering Dangerous Goods for Transport by Air

The operator shall take all reasonable measures to ensure that no person offers or accepts dangerous goods for transport by air unless the person has been trained and the goods are properly classified, documented, certificated, described, packaged, marked, labelled and in a fit condition for transport as required by the Technical Instructions.

OPS 3.085 Crew Responsibilities

(a) A crew member shall be responsible for the proper execution of his duties that:

(1) Are related to the safety of the helicopter and its occupants; and

(2) Are specified in the instructions and procedures laid down in the Operations Manual.

(b) A crew member shall:

(1) Report to the commander any fault, failure, malfunction or defect which he believes may affect the airworthiness or safe operation of the helicopter including emergency systems.

(2) Report to the commander any incident that endangered, or could have endangered, the safety of operation; and

(3) Make use of the operator's occurrence reporting scheme in accordance with OPS 3.037(a)(2). In all such cases, a copy of the report(s) shall be communicated to the commander concerned.

(c) Nothing in paragraph (b) above shall oblige a crew member to report an occurrence which has already been reported by another crew member.

(d) A crew member shall not perform duties on a helicopter:

(1) While under the influence of any drug or psychoactive substances that may affect his faculties in a manner contrary to safety;

(2) Until a reasonable time period has elapsed after deep water diving;

(3) Following blood donation except when a reasonable time period has elapsed;

(4) If he is in any doubt of being able to accomplish his assigned duties; or

(5) If he knows or suspects that he is suffering from fatigue, or feels unfit to the extent that the flight may be endangered.

(e) A crew member shall not:

(1) Consume alcohol less than 8 hours prior to the specified reporting time for flight duty or the commencement of standby;

(2) Commence a flight duty period with a blood alcohol level in excess of 0·2 promille;

(3) Consume alcohol during the flight duty period or whilst on standby.

(f) The commander shall:

(1) Be responsible for the safe operation of the helicopter and safety of its occupants and cargo on board from the moment the engine(s) are started until the helicopter finally comes to rest at the end of the flight, with the engine(s) shut down and the rotor blades stopped;

(2) Have authority to give all commands he deems necessary for the purpose of securing the safety of the helicopter and of persons or property carried therein;

(3) Have authority to disembark any person, or any part of the cargo, which, in his opinion, may represent a potential hazard to the safety of the helicopter or its occupants;

(4) Not allow a person to be carried in the helicopter who appears to be under the influence of alcohol or drugs to the extent that the safety of the helicopter or its occupants is likely to be endangered;

(5) Have the right to refuse transportation of inadmissible passengers, deportees or persons in custody if their carriage poses any risk to the safety of the helicopter or its occupants;

(6) Ensure that all passengers are briefed on the location of emergency exits and the location and use of relevant safety and emergency equipment;

(7) Ensure that all operational procedures and check lists are complied with in detail in accordance with the Operations Manual;

(8) Not permit any crew member to perform any activity during a critical phase of flight except those duties required for the safe operation of the helicopter;

(9) Not permit:

(i) A flight data recorder to be disabled, switched off or erased during flight nor permit recorded data to be erased after flight in the event of an accident or an incident subject to mandatory reporting;

(ii) A cockpit voice recorder to be disabled or switched off during flight unless he believes that the recorded data, which otherwise would be erased automatically, should be preserved for incident or accident investigation nor permit recorded data to be manually erased during or after flight in the event of an accident or an incident subject to mandatory reporting;

(10) Decide whether or not to accept a helicopter with unserviceabilities allowed by the Configuration Deviation List (CDL) or Minimum Equipment List (MEL); and

(11) Ensure that the pre-flight inspection has been carried out.

(g) The commander or the pilot to whom conduct of the flight has been delegated shall, in an emergency situation that requires immediate decision and action, take any action he considers necessary under the circumstances. In such cases he may deviate from rules, operational procedures and methods in the interest of safety.

(h) The commander shall be responsible for ensuring that a flight;

(1) will not be commenced if any flight crew member is incapacitated from performing duties by any cause such as injury, sickness, fatigue, the effects of alcohol or drugs; and

(2) will not be continued beyond the nearest suitable heliport when flight crew members' capacity to perform functions is significantly reduced by impairment of faculties from causes such as fatigue, sickness, lack of oxygen.

(i) The commander shall be responsible for notifying the nearest appropriate authority by the quickest available means of any accident involving the helicopter, resulting in serious injury or death of any person or substantial damage to the helicopter or property.

(j) The commander shall be responsible for reporting all known or suspected defects in the helicopter, to the operator, at the termination of the flight.

(k) The pilot-in-command shall be responsible for the journey log book or the general declaration containing the information listed in the Journey Log Book (See OPS 3.1055).

OPS 3.090 Authority of the Commander

All persons carried in the helicopter shall obey all lawful commands given by the commander for the purpose of securing the safety of the helicopter and of persons or property carried therein.

OPS 3.100 Admission to Cockpit

(a) The operator must ensure that no person, other than a flight crew member assigned to a flight, is admitted to, or carried in, the cockpit unless that person is:

(1) An operating crew member;

(2) A representative of the Authority responsible for certification, licensing or inspection if this is required for the performance of his official duties; or

(3) Permitted by, and carried in accordance with instructions contained in the Operations Manual.

(b) The commander shall ensure that:

(1) In the interests of safety, admission to the cockpit does not cause distraction and/or interfere with the flight's operation; and

(2) All persons carried on the cockpit are made familiar with the relevant safety procedures.

(c) The final decision regarding the admission to the cockpit shall be the responsibility of the commander.

OPS 3.105 Unauthorised Carriage

The operator shall take all reasonable measures to ensure that no person secretes himself or secretes cargo on board a helicopter.

OPS 3.110 Portable Electronic Devices

The operator shall not permit any person to use, and take all reasonable measures to ensure that no person does use, on board a helicopter a portable electronic device that can adversely affect the performance of the helicopter‘s systems and equipment.

OPS 3.115 Alcohol and Drugs

The operator shall not permit any person to enter or be in, and take all reasonable measures to ensure that no person enters or is in, a helicopter when under the influence of alcohol or drugs to the extent that the safety of the helicopter or its occupants is likely to be endangered.

OPS 3.120 Endangering Safety

(a) The operator shall take all reasonable measures to ensure that no person recklessly or negligently acts or omits to act:

(1) So as to endanger a helicopter or person therein;

(2) So as to cause or permit a helicopter to endanger any person or property.

OPS 3.125 Documents to be Carried

(See AC OPS 3.125)

(a) The operator shall ensure that the following are carried on each flight:

(1) The Certificate of Registration;

(2) The Certificate of Airworthiness;

(3) The original or a copy of the Noise Certificate (if applicable), including an English translation, where one has been provided by the Authority responsible for issuing the noise certificate;

(4) [A certified true copy of the Air Operator Certificate including the operations specifications relevant to the helicopter type, issued in conjunction with the certificate;]

(5) The Aircraft Radio Licence;

(6) The original or a copy of the Insurance Certificate(s), which cover the aircraft, passengers and third party liability clauses.

(b) Each flight crew member shall, on each flight when practicable, carry a valid flight crew licence with appropriate rating(s) for the purpose of the flight.

OPS 3.130 Manuals to be Carried

(a) The operator shall ensure that:

(1) The current parts of the Operations Manual relevant to the duties of the crew are carried on each flight (See AMC OPS 3.130);

(2) Those parts of the Operations Manual which are required for the conduct of a flight are easily accessible to the crew on board the helicopter; and

(3) The current Helicopter Flight Manual is carried in the helicopter unless the Authority has accepted that the Operations Manual prescribed in OPS 3.1045, Appendix 1, Part B, contains relevant information for that helicopter.

OPS 3.135 Additional Information and Forms to be Carried

(a) The operator shall ensure that, in addition to the documents and manuals prescribed in OPS 3.125 and OPS 3.130, the following information and forms, relevant to the type and area of operation, are carried on each flight:

(1) Operational Flight Plan containing at least the information required in OPS 3.1060;

(2) Helicopter Technical Log containing at least the information required in OPS 3.915(a);

(3) Details of the filed ATS flight plan;

(4) Appropriate NOTAM/AIS briefing documentation;

(5) Appropriate meteorological information;

(6) Mass and balance documentation as specified in OPS 3, Subpart J;

(7) Notification of special categories of passenger such as security personnel, if not considered as crew, handicapped persons, inadmissible passengers, deportees and persons in custody;

(8) Notification of special loads including dangerous goods including written information to the commander as prescribed in OPS 3.1215(d);

(9) Current maps and charts and associated documents as prescribed in OPS 3.290(b)(7);

(10) Any other documentation which may be required by the States concerned with this flight, such as cargo manifest, passenger manifest etc.; and

(11) Forms to comply with the reporting requirements of the Authority and the operator.

(b) The Authority may permit the information detailed in sub-paragraph (a) above, or parts thereof, to be presented in a form other than on printed paper. An acceptable standard of accessibility, usability and reliability must be assured.

OPS 3.140 Information Retained on the Ground

(a) The operator shall ensure that:

(1) at least for the duration of each flight or series of flights;

(i) information relevant to the flight and appropriate for the type of operation is preserved on the ground; and

(ii) the information is retained until it has been duplicated at the place at which it will be stored in accordance with OPS 3.1065;

or, if this is impracticable,

(iii) the same information is carried in a fireproof container in the helicopter.

(b) The information referred to in sub-paragraph (a) above includes:

(1) A copy of the operational flight plan where appropriate;

(2) Copies of the relevant part(s) of the helicopter technical log;

(3) Route specific NOTAM documentation if specifically edited by the operator;

(4) Mass and balance documentation if required (OPS 3.625 refers); and

(5) Special loads notification.

OPS 3.145 Power to Inspect

The operator shall ensure that any person authorised by the Authority is permitted at any time to board and fly in any helicopter operated in accordance with an AOC issued by that Authority and to enter and remain in the cockpit provided that the commander may refuse access to the cockpit if, in his opinion, the safety of the helicopter would thereby be endangered.

OPS 3.150 Production of Documentation and Records

(a) The operator shall:

(1) Give any person authorised by the Authority access to any documents and records which are related to flight operations or maintenance; and

(2) Produce all such documents and records, when requested to do so by the Authority, within a reasonable period of time.

(b) The commander shall, within a reasonable time of being requested to do so by a person authorised by an Authority, produce to that person the documentation required to be carried on board.

OPS 3.155 Preservation of Documentation

(a) The operator shall ensure that:

(1) Any original documentation, or copies thereof, that he is required to preserve is preserved for the required retention period even if he ceases to be the operator of the helicopter; and

(2) Where a crew member, in respect of whom the operator has kept a record in accordance with Subpart Q, becomes a crew member for another operator, that record is made available to the new operator.

OPS 3.160 Preservation, Production and Use of Flight Recorder Recordings

(See AMC OPS 3.160(a)).

(a) *Preservation of recordings*

(1) Following an accident, the operator of a helicopter on which a flight recorder is carried shall, to the extent possible, preserve the original recorded data pertaining to that accident, as retained by the recorder for a period of 60 days unless otherwise directed by the investigating authority.

(2) Unless prior permission has been granted by the Authority, following an incident that is subject to mandatory reporting, the operator of a helicopter on which a flight recorder is carried shall, to the extent possible, preserve the original recorded data pertaining to that incident, as retained by the recorder for a period of 60 days unless otherwise directed by the investigating authority.

(3) Additionally, when the Authority so directs, the operator of a helicopter on which a flight recorder is carried shall preserve the original recorded data for a period of 60 days unless otherwise directed by the investigating authority.

(4) When a flight data recorder is required to be carried aboard a helicopter, the operator of that helicopter shall:

(i) Save the recordings for the period of operating time as required by OPS 3.715 and OPS 3.720 except that, for the purpose of testing and maintaining flight data recorders, up to one hour of the oldest recorded material at the time of testing may be erased; and

(ii) Keep a document which presents the information necessary to retrieve and convert the stored data into engineering units. The documentation must be updated at regular intervals and shall contain;

(A) flight data recorder parameter allocations;

(B) conversion equations;

(C) periodic calibration records; and

(D) other serviceability/maintenance information.

Note: The documentation requirement concerning FDR parameters provided by operators to accident investigation authorities should be in electronic format and take account of industry specifications

(iii) At all times preserve a record of not less than one representative flight, that is to say, a recording of a flight made within the last 12 months which includes a take-off, climb, cruise, descent, approach to landing and landing, together with a means of identifying the record with the flight to which it relates.

(b) *Production of recordings*. The operator of a helicopter on which a flight recorder is carried shall, within a reasonable time after being requested to do so by the Authority, produce any recording made by a flight recorder which is available or has been preserved.

OPS 3.161 [Protection of Recordings and Transcripts

[(See CAR SMS, Appendix 3)

(a) Until 22 November 2028, the Authority shall not allow the use of recordings or transcripts of CVR, CARS, Class A AIR and Class A AIRS for purposes other than the investigation of an accident or incident in accordance with Annex 13 except where the recordings or transcripts are:

(1) related to a safety-related event identified in the context of a safety management system; are restricted to the relevant portions of a de-identified transcript of the recording; and are subject to the protections accorded by CAR SMS;

(2) sought for use in criminal proceedings not related to an event involving an accident or incident investigation and are subject to the protections accorded by CAR SMS; or

(1) used for inspections of flight recorder systems as provided in Appendix 2 to OPS 3.700/710/715.

Note: When an investigation under CAR ACC, or under ICAO Annex 13 by another State, is instituted, investigation records are subject to the protections accorded by Annex 13.

(b) As of 23 November 2028, the Authority shall not allow the use of recordings or transcripts of CVR, CARS, Class A AIR and Class A AIRS except where the recordings or transcripts are:

(2) used in the investigation of an accident or incident instituted under Annex 13;

(3) used in the assessment of a safety-related event identified in the context of a safety management system, in which case such use is restricted to the relevant portions of a de identified transcript of the recording; and are subject to the protections accorded by CAR SMS;

(4) sought for use in criminal proceedings not related to an event involving an Annex 13 accident or incident investigation, in which case such use is restricted to the relevant portions disclosed under authoritative safeguards; or

(5) used for inspections of flight recorder systems as provided in Appendix 2 to OPS 3.700/710/715.

Note 1: When an investigation under Annex 13 is instituted, the protection accorded to accident and investigation records, including recordings or transcripts of CVR, CARS, Class A AIR and Class A AIRS, is determined in accordance with Annex 13. Provisions on the protection of safety data and safety information collected for purposes of maintaining or improving safety, as well as related sources are contained in CAR SMS.

Note 2: Authoritative safeguards include legal limitations or restrictions such as protective orders, closed proceedings, in-camera review, and de-identification of data for the use or disclosure of safety information in criminal proceedings.

(c) Until 22 November 2028, the Authority shall not allow the use of recordings or transcripts of FDR, ADRS as well as Class B and Class C AIR and AIRS for purposes other than the investigation of an accident or incident in accordance with Annex 13, except where the recordings or transcripts are subject to the protections accorded by CAR SMS and are;

(1) used by the operator for airworthiness or maintenance purposes;

(2) sought for use in proceedings not related to an event involving an accident or incident investigation;

(3) de-identified; or

(4) disclosed under secure procedures.

Note: Provisions on the protection of safety data, safety information and related sources are contained in CAR SMS, Appendix 3.

(d) As of 23 November 2028, the Authority shall not allow the use of recordings or transcripts of FDR, ADRS, Class B and C AIR, and Class B and C AIRS except where the recordings or transcripts are;

(1) used in the investigation of an accident or incident instituted under Annex 13;

(2) used by the operator for airworthiness or maintenance purposes; or

(3) sought for use in proceedings not related to an event involving an accident or incident investigation;

Note: Provisions on the protection of safety data and safety information collected for purposes of maintaining or improving safety, as well as related sources are contained in CAR SMS.]

OPS 3.165 Leasing

(a) *Terminology*

Terms used in this sub-paragraph have the following meaning:

(1) *Dry lease* - Is when the helicopter is operated under the AOC of the lessee.

(2) *Wet lease* - Is when the helicopter is operated under the AOC of the lessor.

(b) *Reserved*

(c) *Leasing of helicopters between A San Marino operator and any entity*

(1) *Dry lease-in*

(i) A San Marino operator shall not dry lease-in a helicopter from an entity, unless approved by the Authority. Any conditions which are part of this approval must be included in the lease agreement.

(ii) A San Marino operator shall ensure that, with regard to helicopters that are dry leased-in, any differences from the requirements prescribed in Subparts K, L, and M, are notified to and are acceptable to the Authority.

(2) *Wet lease-in*

(i) A San Marino operator shall not wet lease-in a helicopter from an entity without the approval of the Authority.

(ii) A San Marino operator shall ensure that, with regard to helicopters that are wet leased-in:

(A) The safety standards of the lessor with respect to maintenance and operation are equivalent to CARs;

(B) The lessor is the operator holding an AOC issued by a State which is a signatory to the Chicago Convention:

(C) The helicopter has a standard Certificate of Airworthiness issued in accordance with ICAO Annex 8.

(D) Any requirement made applicable by the lessee's Authority is complied with.

(3) *Dry lease-out*

(i) A San Marino operator may dry lease-out a helicopter for the purpose of commercial air transportation to any operator of a State which is signatory to the Chicago Convention provided that the following conditions are met:

(A) The Authority has exempted the operator from the relevant provisions of OPS 3 and, after the foreign regulatory authority has accepted responsibility in writing for surveillance of the maintenance and operation of the helicopter(s), has removed the helicopter from its AOC; and

(B) The helicopter is maintained according to an approved maintenance programme.

(4) *Wet lease-out*. A San Marino operator providing a helicopter and complete crew to another entity and retaining all the functions and responsibilities prescribed in Subpart C, shall remain the operator of the helicopter.

(d) *Leasing of helicopters at short notice*. In circumstances where a San Marino operator is faced with an immediate, urgent and unforeseen need for a replacement helicopter, the approval required by sub-paragraph (c)(2)(i) above may be deemed to have been given provided that:

(1) The lessor is the operator holding an AOC issued by a State which is a signatory to the Chicago Convention; and

(2) The lease-in period does not exceed 14 consecutive days; and

(3) The Authority is immediately notified of the use of this provision.

OPS 3.170 Helicopter operated under an Article 83 *bis* agreement

(a) A helicopter, when operating under an Article 83 *bis* agreement entered into between the State of Registry and the State of the Operator, shall carry a certified true copy of the agreement summary, in either an electronic or hard copy format. When the summary is issued in a language other than English, an English translation shall be included.

(b) The agreement summary of an Article 83 *bis* agreement shall be accessible to a civil aviation safety inspector to determine which functions and duties are transferred under the agreement by the State of Registry to the State of the Operator, when conducting surveillance activities such as ramp checks.

(c) The agreement summary shall be transmitted to ICAO together with the Article 83 *bis* Agreement for registration with the ICAO Council by the State of Registry or the State of the Operator.

Note: The agreement summary transmitted with the Article 83 bis *agreement registered with the ICAO Council contains the list of all aircraft affected by the agreement. However, the certified true copy to be carried on board will need to list only the specific aircraft carrying the copy.*

(d) The agreement summary should contain the information in ICAO 6, Part III, Appendix 6 for the specific aircraft and should follow the layout of Appendix 6, paragraph 2.

Appendix 1 to OPS 3.005(c)

Helicopter Flight Manual Limitations

(a) For helicopters certificated in Category A, a momentary flight through the height velocity (HV) envelope is allowed during the take-off and landing phases when the helicopter is operated according to any of the following requirements:

(1) OPS 3.517; or

(2) Appendix 1 to OPS 3.005(i); or

(3) Appendix 1 to OPS 3.005(e).

Appendix 1 to OPS 3.005(d)

Helicopter Emergency Medical Service
(See AC Appendix 1 to OPS 3.005(d))

Note: The Authority is empowered to decide which operation is a HEMS operation in the sense of this Appendix.

(a) *Terminology*

(1) *Ground emergency service personnel*. Any ground emergency service personnel (such as policemen, firemen, etc.) involved with HEMS and whose tasks are to any extent pertinent to helicopter operations.

(2) *HEMS crew member*. A person who is assigned to a HEMS flight for the purpose of attending to any person in need of medical assistance carried in the helicopter and assisting the pilot during the mission. This person is subject to specific training as detailed in sub-paragraph (e)(2) below.

(3) *Helicopter Emergency Medical Service (HEMS) flight*. A flight by a helicopter operating under a HEMS approval, the purpose of which is to facilitate emergency medical assistance, where immediate and rapid transportation is essential, by carrying:

(i) Medical personnel; or

(ii) Medical supplies (equipment, blood, organs, drugs); or

(iii) Ill or injured persons and other persons directly involved.

(See also AC to Appendix 1 to OPS 3.005(d), paragraph (a)(4).))

(4) *HEMS dispatch centre*. A place where, if established, the coordination or control of the HEMS flight takes place. It may be located in a HEMS Operating Base.

(5) *HEMS operating base*. A heliport at which the HEMS crew members and the HEMS helicopter may be on stand-by for HEMS operations.

(6) *HEMS operating site*. A site selected by the commander during a HEMS flight for HHO, landing and take-off (See AC to Appendix 1 to 3.005(d), sub-paragraph 7).

(7) *Medical passenger*. A medical person carried in a helicopter during a HEMS flight, including but not limited to doctors, nurses and paramedics. This passenger shall receive a briefing as detailed in sub-paragraph (e)(3) below.

(b) *Operations Manual*. The operator must ensure that the Operations Manual includes a supplement specifying operational considerations specific to HEMS operations. Relevant extracts from the Operations Manual shall be made available to the organisation for which the HEMS is being provided. (See AC to Appendix 1 to OPS 3.005(d) sub-paragraph (b).)

(c) *Operating requirements*

(1) *The helicopter*. Performance Class 3 operations shall not be conducted over a hostile environment.

(2) *Performance requirements*

(i) *Take-off and landing - helicopters with a MTOM of 5700 kg or less*

(A) Helicopters conducting operations to/from a heliport at a hospital which is located in a hostile environment, shall be operated in accordance with Subpart G (Performance Class 1) except when the operator holds an approval to operate under Appendix 1 to OPS 3.005(i).

(B) Helicopters conducting operations to/from a HEMS operating site located in a hostile environment shall as far as possible be operated in accordance with Subpart G (Performance Class 1). The commander shall make every reasonable effort to minimise the period during which there would be danger to helicopter occupants and persons on the surface in the event of failure of a power (See AC to Appendix 1 to OPS 3.005(d) sub-paragraph (c)(2)(i)(B)).

(C) The HEMS operating site must be big enough to provide adequate clearance from all obstructions. For night operations, the site must be illuminated (from the ground or from the helicopter) to enable the site and any obstructions to be identified. (See AC to Appendix 1 to 3.005(d), sub-paragraph (c)(2)(i)(C).)

(D) Guidance on take-off and landing procedures at previously un-surveyed HEMS operating sites shall be contained in the Operations Manual.

(ii) *Take-off and landing - helicopters with a MTOM exceeding 5700 kg.* Helicopters conducting HEMS shall be operated in accordance with Performance Class 1.

(3) *The crew*. Notwithstanding the requirements prescribed in Subpart N, the following apply to HEMS operations:

(i) *Selection*. The Operations Manual shall contain specific criteria for the selection of flight crew members for the HEMS task, taking previous experience into account.

(ii) *Experience*. The minimum experience level for commanders conducting HEMS flights shall not be less than:

(A) Either:

(A1) 1000 hours pilot in command of aircraft of which 500 hours is as pilot-in-command on helicopters; or

(A2) 1000 hours as co-pilot in HEMS operations of which 500 hours is as pilot-in-command under supervision; and, 100 hours pilot-in-command of helicopters.

(B) 500 hours operating experience in helicopters gained in an operational environment similar to the intended (See AC to Appendix 1 to OPS 3.005(d) sub-paragraph (c)(3)(ii)(B)); and

(C) For pilots engaged in night operations, 20 hours VMC at night as pilot-in-command; and

(D) Successful completion of training in accordance with sub-paragraph (e) of this Appendix.

(iii) *Recency*. All pilots conducting HEMS operations shall have completed a minimum of 30 minutes flight by sole reference to instruments in a helicopter or in a synthetic training device (FSTD) within the last 6 months. (See AC to Appendix 1 to OPS 3.005(d) subparagraph (c)(3)(iii).)

(iv) *Crew composition.* See AC to Appendix 1 to OPS 3.005(d), subparagraph (c)(3)(iv);

(A) *Day flight*. The minimum crew by day shall be one pilot and one HEMS crew member. This can be reduced to one pilot only in exceptional circumstances.

(B) *Night flight*. The minimum crew by night shall be two pilots. However, one pilot and one HEMS crew member may be employed in specific geographical areas defined by the operator in the Operations Manual to the satisfaction of the Authority taking into account the following:

(B1) Adequate ground reference;

(B2) Flight following system for the duration of the HEMS mission (see AMC to Appendix 1 to OPS 3.005(d), sub-paragraph (c)(3)(iv)(B)(B2));

(B3) Reliability of weather reporting facilities;

(B4) HEMS minimum equipment list;

(B5) Continuity of a crew concept;

(B6) Minimum crew qualification, initial and recurrent training;

(B7) Operating procedures, including crew co-ordination;

(B8) Weather minima;

(B9) Additional considerations due to specific local conditions.

(4) *HEMS operating minima.*

(i) *Performance Class 1 and 2 operations*. The weather minima for the despatch and en-route phase of a HEMS flight are shown in the following Table. In the event that during the en-route phase the weather conditions fall below the cloud base or visibility minima shown, VMC only capable helicopters must abandon the flight or return to base. Helicopters equipped and certificated for IMC Operations may abandon the flight, return to base or convert in all respects to a flight conducted under IFR, provided the flight crew are suitably qualified.

Table 1 - HEMS Operating Minima

2 PILOTS		1 PILOTS	
DAY			
Ceiling	Visibility	Ceiling	Visibility
500 ft and above	(See OPS 3.465)	500 ft and above	(See OPS 3.465)
499–400 ft	1 000m (Note 1)	499–400 ft	2 000 m
399–300 ft	2 000 m	399–300 ft	3 000 m
NIGHT			
Cloud base	Visibility	Cloud base	Visibility
1 200 ft (Note 2)	2 500 m	1 200 ft (Note 2)	3 000 m

Note 1: Visibility may be reduced to 800 m for short periods when in sight of land if the helicopter is manoeuvred at a speed that will give adequate opportunity to observe any obstacles in time to avoid a collision. (See AC OPS 3.465.)

Note 2: Cloud base may be reduced to 1000 ft for short periods.

(ii) *Performance Class 3 operations.* The weather minima for the despatch and en-route phase of a HEMS flight shall be a cloud ceiling of 600 ft and a visibility of 1 500 m. Visibility may be reduced to 800 m for short periods when in sight of land if the helicopter is manoeuvred at a speed that will give adequate opportunity to observe any obstacle and avoid a collision. *(See AC OPS 3.465.)*

(d) *Additional requirements*

(1) *Helicopter medical equipment*

(i) The installation of all helicopter dedicated medical equipment and, where appropriate, its operation including any subsequent modifications shall be approved.

(ii) The operator shall ensure that procedures are established for the use of portable equipment on board.

(2) *Helicopter communication and navigation equipment*. Helicopters conducting HEMS flights shall be provided with communications equipment, in addition to that required by OPS 3, Subpart L, capable of conducting two-way communication with the organisation for which the HEMS is being provided and, where possible, to communicate with ground emergency service personnel. Any such additional equipment will require airworthiness approval.

(3) *HEMS operating base facilities*

(i) If crew members are required to be on standby with a reaction time of less than 45 minutes, dedicated suitable accommodation shall be provided close to each operating base.

(ii) At each operating base the pilots shall be provided with facilities for obtaining current and forecast weather information and shall be provided with satisfactory communications with the appropriate ATS unit. Satisfactory facilities shall be available for the planning of all tasks.

(4) *Refuelling with passengers on board*. When specifically authorised by the Authority and when the commander considers refuelling with passengers on board to be necessary, it can be undertaken either rotors stopped or rotors turning provided the following requirements are met:

(i) Door(s) on the refuelling side of the helicopter shall remain closed;

(ii) Door(s) on the non-refuelling side of the helicopter shall remain open, weather permitting;

(iii) Firefighting facilities of the appropriate scale shall be positioned so as to be immediately available in the event of a fire; and

(iv) Sufficient personnel shall be immediately available to move patients clear of the helicopter in the event of a fire.

(e) *Training and checking*

(1) *Flight crew members*

(i) OPS 3, Subpart N training with the following additional items:

(A) Meteorological training concentrating on the understanding and interpretation of available weather information;

(B) Preparing the helicopter and specialist medical equipment for subsequent HEMS departure;

(C) Practice of HEMS departures;

(D) The assessment from the air of the suitability of HEMS operating sites; and

(E) The medical effects air transport may have on the patient.

(ii) OPS 3 Subpart N checking with the following additional items:

(A) VMC proficiency day and/or night checks as appropriate including flying landing and take-off profiles likely to be used at HEMS operating sites.

(B) Line checks with special emphasis on the following (See AMC Appendix 1 to OPS 3.005(d) (e)(1)(ii)(B):

(B1) Local area meteorology;

(B2) HEMS flight planning;

(B3) HEMS departures;

(B4) The selection from the air of HEMS operating sites;

(B5) Low level flight in poor weather; and

(B6) Familiarity with established HEMS operating sites in operator's local area register.

(2) *HEMS crew member*. The HEMS crew member shall be trained in accordance with the requirements of Subpart O with the following additional items:

(i) Duties in the HEMS role;

(ii) Navigation (map reading, navigation aid principles and use);

(iii) Operation of radio equipment;

(iv) Use of on-board medical equipment;

(v) Preparing the helicopter and specialist medical equipment for subsequent HEMS departure;

(vi) Instrument reading, warnings, use of normal and emergency check lists in assistance of the pilot as required;

(vii) Basic understanding of the helicopter type in terms of location and design of normal and emergency systems and equipment;

(viii) Crew coordination;

(ix) Practice of response to HEMS call out;

(x) Conducting refuelling and rotors running refuelling;

(xi) HEMS operating site selection and use;

(xii) Techniques for handling patients, the medical consequences of air transport and some knowledge of hospital casualty reception;

(xiii) Marshalling signals;

(xiv) Under slung load operations as appropriate;

(xv) Winch operations as appropriate;

(xvi) The dangers to self and others of rotor running helicopters including loading of patients;

(xvii) The use of the helicopter inter-communications system.

(3) *Medical passengers*. Prior to any HEMS flight, or series of flights, medical passengers shall be briefed on the following:

(i) Familiarisation with the helicopter type(s) operated;

(ii) Entry and exit under normal and emergency conditions both for self and patients;

(iii) Use of the relevant on-board specialist medical equipment;

(iv) The need for the commander's approval prior to use of specialised equipment;

(v) Method of supervision of other medical staff;

(vi) The use of helicopter inter-communication systems; and

(vii) Location and use of on-board fire extinguishers.

(4) *Ground emergency service personnel*. The operator shall take all reasonable measures to ensure that ground emergency service personnel are familiar with the following (see AMC Appendix 1 to OPS 3.005(d), sub-paragraph (e)(4)):

(i) Two way radio communication procedures with helicopters;

(ii) The selection of suitable HEMS operating sites for HEMS flights;

(iii) The physical danger areas of helicopters;

(iv) Crowd control in respect of helicopter operations; and

(v) The evacuation of helicopter occupants following an on-site helicopter accident.

Appendix 1 to OPS 3.005(e)

Helicopter Operations over a Hostile Environment Located Outside a Congested Area

(See AMC Appendix 1 to OPS 3.005(e))

(a) *Approval.* The operator wishing to conduct operations in accordance with this Appendix must have the prior approval of the Authority issuing the AOC and the Authority of the State in which it is intended to conduct such operations. Such an approval will specify:

(1) The type of helicopter; and

(2) The type of operation.

(b) *Applicability*. This Appendix shall only be applicable to turbine-powered helicopters operating over a hostile environment located outside a congested area where it has been substantiated that helicopter limitations, or other justifiable considerations, preclude the use of the appropriate performance criteria.

(c) *Performance Class 2 Alleviation.* Helicopters operating in Performance Class 2 over a hostile environment located outside a congested area and with a maximum approved passenger seating configuration (MAPSC) of 9 or less passengers are exempt from the following requirements of OPS 3, Subpart H:

(1) OPS 3.520(a)(2);

(2) OPS 3.535(a)(2).

(d) *Performance Class 3 Alleviation.* Helicopters operating in Performance Class 3 over a hostile environment located outside a congested area and with a maximum approved passenger seating configuration (MAPSC) of 6 or less are exempt from the requirement of OPS 3.240(a)(5) provided that the operator complies with Appendix 1 to OPS 3.517(a),sub-paragraphs (a)(2)(i) & (ii).

(e) *Operation*. Specific procedures to be followed in the event of a power unit failure during take-off and landing must be established in the Operations Manual.

(f) *Supplemental Oxygen for non-pressurised helicopters.* Operations may be conducted with non-pressurised helicopters at pressure altitudes above 10000 ft without the provision of supplemental oxygen equipment capable of storing and dispensing the oxygen supplies required, provided the cabin altitude does not exceed 10000 ft for a period in excess of 30 minutes and never exceeds 13000 ft pressure altitude.

Appendix 1 to OPS 3.005(f)

Operations for Small Helicopters (VFR Day Only)

(a) *Terminology.*

(1) Local Operations. Flight conducted within a local and defined geographical area acceptable to the Authority, which start and end at the same location on the same day.

(b) *Approval*. The operator wishing to conduct operations in accordance with this Appendix must have the prior approval of the Authority issuing the AOC. Such an approval shall specify:

(1) The type of helicopter; and

(2) The type of operation.

(3) The geographical limitations of local operations in the context of this appendix (see AC to Appendix 1 to OPS 3.005(f) paragraph (b)(3)).

(c) *Prohibition.* The following activities are prohibited:

(1) OPS 3.065. Carriage of weapons of war and munitions of war.

(2) OPS 3.265. Carriage of inadmissible passengers, deportees or persons in custody.

(3) OPS 3.305. Refuelling/de-fuelling with passengers embarking, on board or disembarking.

(4) OPS 3.335. Smoking on board.

(d) *Alleviation.* The following rules are alleviated:

(1) OPS 3.100 Admission to cockpit:

(i) The operator must establish rules for the carriage of passengers in a pilot seat, if applicable.

(ii) The commander must ensure that:

(A) carriage of passengers in the pilot seat does not cause distraction and/or interference with the flight's operation; and

(B) the passenger occupying a pilot seat is made familiar with the relevant restrictions and safety procedures.

(2) OPS 3.135 Additional information and forms to be carried.

(i) For local operations the following documents need not be carried:

(A) OPS 3.135(a)(1) - Operational Flight Plan

(B) OPS 3.135(a)(2) - Technical Log (except where required for land-away)

(C) OPS 3.135(a)(4) - Notam/AIS documentation

(D) OPS 3.135(a)(5) - Meteorological information

(E) OPS 3.135(a)(7) - Notification of special passengers, etc.

(F) OPS 3.135(a)(8) - Notification of special loads, etc.

(ii) For non-local operations:

(A) OPS 3.135(a)(1) - Operational Flight Plan. The flight plan may be in a simplified form, relevant to the kind of operations conducted and acceptable to the Authority.

(B) OPS 3.135(a)(7) - Notification of special passengers. Is not required.

(3) OPS 3.140 Information retained on the ground. Information need not be retained on the ground when other methods of recording are employed.

(4) OPS 3.165 Leasing. Applicable only where formal leasing agreement exists.

Note: The case where the contract to carry the passengers are transferred to another operator to whom the passengers will pay for the transport, is not considered as leasing.

(5) OPS 3.215 Use of Air Traffic Services. Not applicable unless mandated by air space requirements and providing search and rescue service arrangements are acceptable to the Authority.

(6) OPS 3.220 Authorisation of Heliports by the operator. The operator shall establish a procedure to qualify the Commanders for the selection of heliports or landing sites, suitable for the type of helicopter and the type of operation.

(7) OPS 3.255 Fuel policy. Subparagraphs (b) to (d) are not applicable when the fuel policy prescribed in OPS 3.255(a) ensures that, on completion of the flight, or series of flights, the fuel remaining is not less than an amount of fuel sufficient for 30 minutes flying time at normal cruising (this may be reduced to 20 minutes when operating within an area providing continuous and suitable precautionary landing sites). Final reserve fuel must be specified in the operations manual in order to be able to comply with OPS 3.375(c).

(8) OPS 3.280 Passenger seating. Procedures are not required to be established.

Note: The intent of this paragraph is achieved by the pilot using normal judgement. OPS 3.260 is applicable and is considered to address the need for procedures.

(9) OPS 3.285 Passenger briefing.

(i) Paragraph (a)(1). Unless to do so would be unsafe, passengers are verbally briefed about safety matters, parts or all of which may be given by an audio-visual presentation. Prior approval must be given for the use of portable electronic devices.

(10) OPS 3.290 Flight preparation.

(i) For local operations:

(A) OPS 3.290(a). An operational flight plan is not required.

(ii) For non-local operations:

(A) OPS 3.290(a). An operational flight plan may be prepared in a simplified form relevant to the kind of operation.

(11) OPS 3.375 In-flight fuel management. Appendix 1 to OPS 3.375 need not be applied (see (d)(14) below).

(12) OPS 3.385 Use of supplemental oxygen. With prior approval of the authority, excursions between 10000 ft and 16000 ft for a short duration may be undertaken without the use of supplemental oxygen in accordance with procedures contained in the Operations Manual. (In such circumstances, the operator must ensure that the passengers are informed before departure that supplemental oxygen will not be provided.)

(13) Appendix 1 to OPS 3.270 Stowage of baggage and cargo. As appropriate to the type of operation and helicopter.

(14) Appendix 1 to OPS 3.375 In-flight fuel management. Not applicable.

(15) OPS 3.630 General Introduction. Instruments and Equipment. Alternative equipment that does not meet current TSO standards but does meet the safety standard of the original equipment may be acceptable to the Authority.

(16) OPS 3.775 Supplemental Oxygen - Non pressurised helicopters. With prior approval of the authority, excursions of a short duration between 10000 ft and 16000 ft may be undertaken without supplemental oxygen, in accordance with procedures contained in the Operations Manual.

(17) Appendix 1 to OPS 3.775 Supplemental oxygen for non-pressurised helicopters. Not applicable in accordance with (12) & (16) above.

(18) OPS 3.955(b) Upgrading to Commander. The Authority may accept an abbreviated command course relevant to the type of operation to be undertaken.

(19) OPS 3.970(a) Recent Experience. As an alternative to the requirement of OPS 3.970(a), with prior approval of the Authority, the 90 day recency may be satisfied if a pilot has performed 3 take-offs, 3 circuits and 3 landings on any helicopter in the same designated group in the preceding 90 days (see AC to Appendix 1 to OPS 3.005(f) paragraph (d)(19)). The recency qualification for the helicopter type to be operated is conditional upon:

(i) the Type Rating Proficiency Check (TRPC) on the type being valid; and

(ii) the achievement of 2 flying hours on the type or variant within the last 6 months; and

(iii) an OPC being valid on one of the helicopters in the designated group; and

(iv) a strict rotation of OPCs for all helicopters being flown in the designated group; and

(v) the composition of designated groups and the procedure for validation of TRPCs, OPCs and recency, being contained in the operations manual.

(20) Appendix 1 to OPS 3.965 Recurrent Training and checking. A syllabus applicable to the type of operation may be accepted by the Authority.

(21) OPS 3.1060 Operational flight plan. See (2)(i)(A) & (2)(ii)(A) above.

(22) OPS 3.1235 Security requirements. Applicable only when operating in States where the national security Programme applies to the operations covered in this Appendix.

(23) OPS 3.1240 Training programs. Training programs shall be adapted to the kind of operations performed. A suitable self-study training Programme may be acceptable to the Authority.

(24) OPS 3.1250 Helicopter search procedure checklist. No checklist is required.

Appendix 1 to OPS 3.005(g)

Local Area Operations (VFR Day Only)

(a) *Approval*. The operator wishing to conduct operations in accordance with this Appendix must have the prior approval of the Authority issuing the AOC. Such an approval will specify:

(1) The type of helicopter

(2) Type of operation

(3) The geographical limitations of operations in the context of this Appendix.

(b) *Prohibition*. The following activities are prohibited:

(1) OPS 3.065. Carriage of weapons of war and munitions of war.

(2) OPS 3.265. Carriage of inadmissible passengers, deportees or persons in custody.

(3) OPS 3.305. Refuelling/de-fuelling with passengers embarking, on board or disembarking.

(4) OPS 3.335. Smoking on board.

(c) *Alleviation*. The following rules are alleviated:

(1) OPS 3.135 Additional information and forms to be carried.

(i) OPS 3.135(a)(1) - Operational Flight Plan. The flight plan may be in a simplified form, relevant to the kind of operations conducted and acceptable to the Authority.

(ii) OPS 3.135(a)(4) - Notam/AIS documentation. Are not required.

(iii) OPS 3.135(a)(5) - Meteorological information. Is not required.

(iv) OPS 3.135(a)(7) - Notification of special passengers, etc. Is not required.

(v) OPS 3.135(a)(8) - Notification of special loads, etc. Is not required.

(2) OPS 3.140 Information retained on the ground. Information need not be retained on the ground when other methods of recording are employed.

(3) OPS 3.165 Leasing. Applicable only where a formal leasing agreement exists.

Note: The case where the contract to carry the passengers are transferred to another operator to whom the passengers will pay for the transport, is not considered as leasing.

(4) OPS 3.215 Use of Air Traffic Services. Not applicable unless mandated by air space requirements and providing search and rescue service arrangements are acceptable to the Authority.

(5) OPS 3.220 Authorisation of Heliports by the operator. The operator shall establish a procedure to qualify the Commanders for the selection of heliports or landing sites, suitable for the type of helicopter and the type of operation.

(6) OPS 3.255 Fuel policy. Subparagraphs (b) to (d) are not applicable when the fuel policy prescribed in OPS 3.255(a) ensures that, on completion of the flight, or series of flights, the fuel remaining is not less than an amount of fuel sufficient for 30 minutes flying time at normal cruising (this may be reduced to 20 minutes when operating within an area providing continuous and suitable precautionary landing sites). Final reserve fuel must be established in the operations manual in order to be able to comply with OPS 3.375(c).

(7) OPS 3.290(a). See (C)(1)(i) above.

(8) OPS 3.375 In-flight fuel management. Appendix 1 to OPS 3.375 need not be applied (see (c)(10) below).

(9) OPS 3.385 Use of supplemental oxygen. With prior approval of the authority excursions between 10000 ft and 13000 ft for a short duration may be undertaken without the use of supplemental oxygen in accordance with procedures contained in the Operations Manual. (In such circumstances, the operator must ensure that passengers are informed before departure that supplemental oxygen will not be provided.)

(10) Appendix 1 to OPS 3.375 In-flight fuel management. Not applicable.

(11) OPS 3.630 General Introduction. Instruments and Equipment. Alternative equipment that does not meet current TSO standards but does meet the safety standard of the original equipment may be acceptable to the Authority.

(12) OPS 3.775 Supplemental Oxygen - Non pressurised helicopters. With prior approval of the authority, excursions of a short duration between 10000 ft and 16000 ft may be undertaken without supplemental oxygen, in accordance with procedures contained in the Operations Manual.

(13) Appendix 1 to OPS 3.775 Supplemental oxygen for non-pressurised helicopters. Not applicable in accordance with (9) & (12) above.

(14) OPS 3.1060 Operational flight plan. See (C)(1)(i) above.

(15) OPS 3.1235 Security requirements. Applicable only in States where the national security programme applies to the operations covered in this Appendix.

Appendix 1 to OPS 3.005(h)

Helicopter Hoist Operations (HHO)

Note: The Authority is empowered to decide which operation is a HHO operation in the sense of this Appendix.

(a) *Terminology*

(1) Helicopter Hoist Operations (HHO) Flight. A flight by a helicopter operating under an HHO approval, the purpose of which is to facilitate the transfer of persons and/or cargo by means of a helicopter hoist.

(2) HHO Crew Member. A crew member who performs assigned duties relating to the operation of a hoist.

(3) HHO Offshore. A flight by a helicopter operating under a HHO approval, the purpose of which is to facilitate the transfer of persons and/or cargo by means of a helicopter hoist from or to a vessel or structure in a sea area.

(4) Hoist Cycle. For the purpose of the setting of crew qualifications of this appendix; is one down-and-up cycle of the hoist hook.

(5) HHO Site. A specified area at which a helicopter performs a hoist transfer.

(6) HHO Passenger. A person who is to be transferred by means of a helicopter hoist.

(b) *Operations Manual*. The operator must ensure that the Operations Manual includes a supplement containing material specific to HHO. In particular it will address:

(1) Performance criteria.

(2) If required, the conditions under which offshore HHO transfer may be conducted including the relevant limitations on vessel movement and wind speed.

(3) The weather limitations for HHO.

(4) The criteria for determining the minimum size of the HHO site - appropriate to the task.

(5) The procedures for determining minimum crew.

(6) The method by which crew members record hoist cycles.

When required, relevant extracts from the Operations Manual supplement shall be made available to the organisation for which the HHO is being provided.

(c) *Maintenance of HHO equipment*. Maintenance instructions for HHO systems must be established by the operator, in liaison with the manufacturer, included in the operator's helicopter maintenance programme prescribed in OPS 3.910 and be approved by the Authority.

(d) *Operating requirements*

(1) *The Helicopter*. During HHO, the helicopter must be capable of sustaining a critical power unit failure with the remaining engine(s) at the appropriate power setting, without hazard to the suspended person(s)/cargo, third parties, or property. (Except for HEMS HHO at a HEMS operating site where the requirement need not be applied.)

(2) *The Crew*. Notwithstanding the requirements prescribed in Subpart N, the following apply to HHO operations:

(i) *Selection*. The Operations Manual shall contain criteria for the selection of flight crew members for the HHO task, taking previous experience into account.

(ii) *Experienc*e. The minimum experience level for commanders conducting HHO flights shall not be less than:

(A) *Offshore*:

(A1) 1 000 hours pilot-in-command of helicopters or 1 000 hours as co-pilot in HHO operations of which 200 hours is as pilot-in-command under supervision; and

(A2) 50 hoist cycles conducted offshore, of which 20 cycles shall be at night if night operations are being conducted.

(B) *Onshore*:

(B1) 500 hours pilot-in-command of helicopters or 500 hours as co-pilot in HHO operations of which 100 hours is as pilot-in-command under supervision;

(B2) 200 hours operating experience in helicopters gained in an operational environment similar to the intended operation (see AMC Appendix 1 to OPS 3.005(d), paragraph (c)(3)(ii)(B));and

(B3) 50 hoist cycles, of which 20 cycles shall be at night if night operations are being conducted.

(C) 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 conducted.

(iii) *Recency*. All pilots and HHO crew members conducting HHO shall, in addition to the requirements of OPS 3.970(a), have completed in the last 90 days:

(A) When operating by day: Any combination of 3 day or night hoist cycles, each of which shall include a transition to and from the hover.

(B) When operating by night: 3 night hoist cycles, each of which shall include a transition to and from the hover.

(iv) *Crew Composition*. The minimum crew for day or night operations shall be as stated in the Operations Manual supplement and will be dependent 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 but, in no case will be less than one pilot and one HHO crew member (See AC to Appendix 1 to OPS 3.005(h) paragraph (d)(2)(iv).)

(e) *Additional Requirements*

(1) *HHO Equipment*. The installation of all helicopter hoist equipment including any subsequent modifications and where appropriate, its operation, shall 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.

(2) *Helicopter Communication Equipment.* Radio equipment, in addition to that required by Subpart L, will require airworthiness approval. The following shall require two-way communication with the organisation for which the HHO is being provided and, where possible, communication with ground personnel:

(i) Day and night offshore operations; or

(ii) Night onshore operations,

(f) *Training and Checking*.

(1) *Flight Crew Members*. The Flight crew member shall be trained in the following subjects:

(i) Subpart N training with the following additional items:

(A) Fitting and use of the hoist;

(B) Preparing the helicopter and hoist equipment for HHO;

(C) Normal and emergency hoist procedures by day and, when required, by night;

(D) Crew co-ordination concept specific to HHO;

(E) Practice of HHO procedures; and

(F) The dangers of static electricity discharge.

(ii) Subpart N checking with the following additional items:

(A) Proficiency checks, as appropriate to day operations which must also be conducted by night if such operations are undertaken by the operator. The checks should include procedures likely to be used at HHO sites with special emphasis on:

(A1) Local area meteorology;

(A2) HHO flight planning;

(A3) HHO departures;

(A4) A transition to and from the hover at the HHO site;

(A5) Normal and simulated emergency HHO procedures; and

(A6) Crew co-ordination.

(2) *HHO Crew Member*. The HHO crew member shall be trained in accordance with the requirements of Subpart O with the following additional items:

(i) Duties in the HHO role;

(ii) Fitting and use of the hoist;

(iii) Operation of hoist equipment;

(iv) Preparing the helicopter and specialist equipment for HHO;

(v) Normal and emergency procedures;

(vi) Crew co-ordination concepts specific to HHO;

(vii) Operation of inter-communications and radio equipment;

(viii) Knowledge of emergency hoist equipment;

(ix) Techniques for handling HHO passengers;

(x) Effect of the movement of personnel on the centre of gravity and mass during HHO;

(xi) Effect of the movement of personnel on performance during normal and emergency flight conditions;

(xii) Techniques for guiding pilots over HHO sites;

(xiii) Awareness of specific dangers relating to the operating environment; and

(xiv) The dangers of static electricity discharge.

(3) *HHO Passengers*. Prior to any HHO flight, or series of flights, HHO passengers shall be briefed and made aware of the dangers of static electricity discharge and other HHO considerations.

Appendix 1 to OPS 3.005(i)

Helicopter Operations at a Public Interest Site

(a) *Approval* - The operator wishing to conduct operations in accordance with this Appendix must have the prior approval of the Authority issuing the AOC and the authority of the State in which it is intended to conduct such operations. Such an approval shall specify:

(1) The public interest site(s) see AC to Appendix 1 to 3.005(i) paragraph (a)(1);

(2) The type(s) of helicopter; and

(3) The type of operation.

(b) *Terminology*

(1) Public interest site: A site, used exclusively for operations in the public interest.

(c) *Applicability*: This Appendix shall only be applicable to multi-engine turbine powered helicopter types, with a maximum approved passenger seating configuration (MAPSC) of six or less, operating to/from public interest sites.

(1) located in a hostile environment; and

(2) which were established as heliports before 01 December 2013.

(d) *Alleviation*:

(1) operations to/from a public interest site shall be conducted in accordance with Subpart G (Performance Class 1).

(2) An exemption may be approved by the Authority for operations to/from a public interest site in accordance with Subpart H (Performance Class 2) provided;

(i) for operations in a non-congested hostile environment, the helicopter mass does not exceed the maximum mass specified in the Helicopter Flight Manual for an AEO OGE hover in still air with all power units operating at an appropriate power rating; and

(ii) for operations in a congested hostile environment, the helicopter mass does not exceed the maximum mass specified in the Helicopter Flight Manual for a climb gradient of 8% in still air; at the appropriate take-off safety speed (Vtoss) with the critical power unit inoperative and the remaining power units operating at an appropriate power rating (See AC to Appendix 1 to OPS 3.005(i) sub-paragraph (d)(2)).

(e) *Operation*. Site specific procedures must be established in the Operations Manual to minimise the period during which there would be danger to helicopter occupants and persons on the surface in the event of a power unit failure during take-off and landing at a public interest site. Part C of the Operations Manual shall contain for each public interest site; a diagram or annotated photograph showing the main aspects, the dimensions, the non-conformance with Subpart G (Performance Class 1), the main risks and the contingency plan should an incident occur.

Appendix 1 to OPS 3.135

Additional Information and Forms to be Carried
(See OPS 3.135)

The Authority may authorise an alleviation against the non-carriage of specific documents for flights within San Marino airspace.

SUBPART C

OPERATOR CERTIFICATION AND SUPERVISION

OPS 3.175 General Rules for Air Operator Certification

Note 1: Appendix 1 to this paragraph specifies the contents and conditions of the AOC.

Note 2: Appendix 2 to this paragraph specifies the management and organisation requirements.

(a) The operator shall not operate a helicopter for the purpose of commercial air transportation otherwise than under, and in accordance with, the terms and conditions of an Air Operator Certificate (AOC) issued by the Authority.

(b) The air operator certificate shall authorise the operator to conduct commercial air transport operations in accordance with the operations specifications.

Note: Unless otherwise specified, reference to an Air Operator Certificate includes the operations specifications associated with the air operator certificate.

(c) An applicant for an AOC, or variation of an AOC, shall allow the Authority to examine all safety aspects of the proposed operation.

(d) An applicant for an AOC must:

(1) Not hold an AOC issued by another Authority unless specifically approved by the Authorities concerned;

(2) Have his principal place of business and, if any, his registered office located in San Marino (see AMC OPS 3.175(d)(2));

(3) Have registered the helicopters which are to be operated under the AOC in San Marino; and

(4) Satisfy the Authority that he is able to conduct safe operations.

(e) Notwithstanding sub-paragraph (c)(3) above, the operator may operate, with the mutual agreement of the Authority issuing the AOC and another Authority, helicopters registered on the national register of the second-named Authority.

(f) The operator shall grant the Authority access to his organisation and helicopters and shall ensure that, with respect to maintenance, access is granted to any associated maintenance organisation, to determine continued compliance with OPS.

(g) An AOC will be varied, suspended or revoked if the Authority is no longer satisfied that the operator can maintain safe operations.

(h) The operator must satisfy the Authority that:

(1) Its organisation and management are suitable and properly matched to the scale and scope of the operation; and

(2) Procedures for the supervision of operations have been defined. (See AMC OPS 3.175(i))

(i) The operator must have nominated an accountable manager acceptable to the Authority who has corporate authority for ensuring that all operations and maintenance activities can be financed and carried out to the standard required by the Authority. (See AC OPS 3.175(j))

(j) The operator must have nominated post holders, acceptable to the Authority, who are responsible for,

(1) Flight operations;

(2) Continuing airworthiness;

(3) Crew training;

(4) Ground operations;

(See AC OPS 3.175(k))

(k) A person may hold more than one of the nominated posts if acceptable to the Authority but, for operators who employ 21 or more full time staff, a minimum of two persons are required to cover the four areas of responsibility. (See AC OPS 3.175(l) &(m).)

(l) For operators who employ 20 or less full time staff, one or more of the nominated posts may be filled by the accountable manager if acceptable to the Authority. (See AC OPS 3.175(l) & (m).)

(m) The operator must ensure that every flight is conducted in accordance with the provisions of the Operations Manual.

(n) The operator must arrange appropriate ground handling facilities to ensure the safe handling of its flights.

Note: The operator maintains permanently its ground handling responsibility even when all or part of the functions and tasks related to ground handling services have been contracted to a service provider.

(o) The operator must ensure that its helicopters are equipped and its crews are qualified, as required for the area and type of operation.

(p) The operator must comply with the maintenance requirements, in accordance with Subpart M, for all helicopters operated under the terms of its AOC.

(q) The operator must provide the Authority with a copy of the Operations Manual, as specified in Subpart P and all amendments or revisions to it.

(r) The operator must maintain operational support facilities at the main operating base, appropriate for the area and type of operation.

(t) The operator shall not establish an operating base in another State without prior approval from the Authority and notification to the State in which the operating base is located.

(See AC OPS 3.175(g)-(t))

OPS 3.180 Issue, Variation and Continued Validity of an AOC

(a) The operator will not be granted an AOC, or a variation to an AOC, and that AOC will not remain valid unless:

(1) Helicopters operated have a valid Certificate of Airworthiness;

(2) The continuing airworthiness system has been approved by the Authority in accordance with Subpart M; and

(3) He has satisfied the Authority that he has the ability to:

(i) Establish and maintain an adequate organisation;

(ii) Establish and maintain a quality system in accordance with OPS 3.035;

(iii) Comply with required training programmes;

(iv) Comply with maintenance requirements, consistent with the nature and extent of the operations specified, including the relevant items prescribed in OPS 3.175(g) to (o); and

(v) Comply with OPS 3.175.

(b) Notwithstanding the provisions of OPS 3.185(f), the operator must notify the Authority as soon as practicable of any changes to the information submitted in accordance with sub-paragraph (a) above.

(c) If the Authority is not satisfied that the requirements of sub-paragraph (a) above have been met, the Authority may require the conduct of one or more demonstration flights, operated as if they were commercial air transport flights.

(d) The Authority has established a system for both the certification and the continued surveillance of the operator to ensure that the required standards of operations established in this Subpart are maintained.

OPS 3.185 Administrative Requirements

(a) The operator shall ensure that the following information is included in the initial application for an AOC and, when applicable, any variation applied for:

(1) The official name and business name, address and mailing address of the applicant;

(2) A description of the proposed operation;

(3) A description of the management organisation;

(4) The name of the accountable manager;

(5) The names of major post holders, including those responsible for flight operations, the maintenance system, crew training and ground operations together with their qualifications and experience; and

(6) The Operations Manual.

(b) In respect of the operator's continuing airworthiness only, the following information must be included in the initial application for an AOC and, when applicable, any variation applied for, and for each helicopter type to be operated (see AMC OPS 3.185(b)):

(1) The maintenance management exposition;

(2) The operator's helicopter maintenance programme(s);

(3) The helicopter technical log;

(4) Where appropriate, the technical specification(s) of the maintenance contract(s) between the operator and any approved maintenance organisation;

(5) The number of helicopters;

(c) The application for an initial issue of an AOC must be submitted at least 90 days before the date of intended operation except that the Operations Manual may be submitted later but not less than 60 days before the date of intended operation.

(d) The application for the variation of an AOC must be submitted at least 30 days, or as otherwise agreed, before the date of intended operation.

(e) Other than in exceptional circumstances, the Authority must be given at least 10 days prior notice of a proposed change of a nominated post holder.

Appendix 1 to OPS 3.175

Contents and Conditions of the Air Operator Certificate

1. The air operator certificate shall follow the layout of ICAO Annex 6, Part III, Appendix 3, paragraph 2 and contain at least the following information;

   (a) The State of the Operator and the issuing authority;

   (b) The air operator certificate number;

   (c) The operator name, trading name (if different) address of the (principal place of business;

   (d) Date of issue and name, signature and title of the authority representative; and

   (e) the location, in a controlled document carried on board, where the contact details of operational management can be found.

2. For each aircraft model in the operator's fleet, identified by aircraft make, model and series, the following information shall be included:

   (a) issuing authority contact details, operator name and AOC number, date of issue and signature of the authority representative, aircraft model, types and area of operations;

   (b) Special limitations; and

   (c) Specific Approvals;

      (1) Dangerous Goods

      (2) Low visibility operations such as LVTO, CAT II/CAT III (including approved minima)

      (3) Offshore operations

      (4) HEMS

      (5) AR navigation specifications for PBN operations

      (6) Continuing airworthiness

      (7) Electronic Flight Bag

      (8) Operational credit operations for advanced aircraft, when used for low visibility operations

      (9) Other; such as

         (i) Helicopter operations over a hostile environment located outside a congested area (See Appendix 1 to OPS 3.005(e)).

         (ii) Operations for small helicopters (VFR Day only) (See Appendix 1 to OPS 3.005(f)).

(iii) Local Area Operations (VFR Day only) (See Appendix 1 to OPS 3.005(g))

(iv) Helicopter Hoist Operations (See Appendix 1 to OPS 3.005(h)

(v) Operations to Public Interest Sites (See Appendix 1 to OPS 3.005(i));

(vi) Helicopter operations with an exposure time to a power unit failure during take-off or landing. (See OPS 3.517 and OPS 3.540(a)(4));

(vii) Operational use of offshore destination alternate heliports.

Appendix 2 to OPS 3.175

The Management and Organisation of an AOC holder

The issue of an air operator certificate by the Authority shall be dependent upon the operator demonstrating an adequate organization, method of control and supervision of flight operations, training programme as well as ground handling and maintenance arrangements consistent with the nature and extent of the operations specified.

The continued validity of an air operator certificate shall depend upon the operator maintaining these requirements under the supervision of the Authority.

In particular;

(a) *General*

The operator must have a sound and effective management structure in order to ensure the safe conduct of air operations. Nominated post holders must have managerial competency together with appropriate technical/operational qualifications in aviation (see also AC OPS 3.175 (i)).

(b) *Nominated post holders*

(1) A description of the functions and the responsibilities of the nominated post holders, including their names, must be contained in the Operations Manual and the Authority must be given notice in writing of any intended or actual change in appointments or functions.

(2) The operator must make arrangements to ensure continuity of supervision in the absence of nominated post holders.

(3) A person nominated as a post holder by the holder of an AOC must not be nominated as a post holder by the holder of any other AOC, unless acceptable to the Authorities concerned.

(4) Persons nominated as post holders must be contracted to work sufficient hours to fulfil the management functions associated with the scale and scope of the operation.

(c) *Adequacy and supervision of staff*

(1) *Crew members*. The operator must employ sufficient flight and cabin crew for the planned operation, trained and checked in accordance with Subpart N and Subpart O as appropriate.

(2) *Ground Staff*

(i) The number of ground staff is dependent upon the nature and the scale of operations. Operations and ground handling departments, in particular, must be staffed by trained personnel who have a thorough understanding of their responsibilities within the organisation.

(ii) The operator contracting other organisations to provide certain services, retains responsibility for the maintenance of proper standards. In such circumstances, a nominated post holder must be given the task of ensuring that any contractor employed meets the required standards.

(3) *Supervision*

(i) The number of supervisors to be appointed is dependent upon the structure of the operator and the number of staff employed.

(ii) The duties and responsibilities of these supervisors must be defined, and any other commitments arranged so that they can discharge their supervisory responsibilities.

(iii) The supervision of crew members and ground staff must be exercised by individuals possessing experience and personal qualities sufficient to ensure the attainment of the standards specified in the operations manual.

(d) *Accommodation facilities*

(1) The operator must ensure that working space available at each operating base is sufficient for personnel pertaining to the safety of flight operations. Consideration must be given to the needs of ground staff, those concerned with operational control, the storage and display of essential records, and flight planning by crews.

(2) Office services must be capable, without delay, of distributing operational instructions and other information to all concerned.

(e) *Documentation*.

The operator must make arrangements for the production of manuals, amendments and other documentation.

(f) Third Parties

The operator shall develop policies and procedures for third parties that perform work on its behalf.

SUBPART D

OPERATIONAL PROCEDURES

OPS 3.195 Operational Control

(See AC OPS 3.195)

(a) The operator shall:

(1) Establish and maintain a method of exercising operational control approved by the Authority; and

(2) Exercise operational control over any flight operated under the terms of his AOC.

(b) Responsibility for operational control shall be delegated only to the pilot-in-command and to a flight dispatcher if the operator's approved method of control and supervision of flight operations requires the use of flight dispatcher personnel.

(c) If an emergency situation which endangers the safety of the helicopter or persons becomes known first to the flight dispatcher, action by that person shall include, where necessary, notification to the appropriate authorities of the nature of the situation without delay, and requests for assistance if required. In the event of an emergency, a flight dispatcher shall:

(1) initiate such procedures as outlined in the operations manual while avoiding taking any action that would conflict with ATC procedures; and

(2) convey safety-related information to the pilot-in-command that may be necessary for the safe conduct of the flight, including information related to any amendments to the flight plan that become necessary in the course of the flight.

Note: It is equally important that the pilot-in-command also convey similar information to the flight dispatcher during the course of the flight, particularly in the context of emergency situations.

(d) If an emergency situation which endangers the safety of the helicopter or persons necessitates the taking of action which involves a violation of local regulations or procedures, the pilot-in-command shall notify the appropriate local authority without delay. If required by the State in which the incident occurs, the pilot-in-command shall submit a report on any such violation to the appropriate authority of such State; in that event, the pilot-in-command shall also submit a copy of it to the Authority. Such reports shall be submitted as soon as possible and normally within ten days.

OPS 3.200 Operations Manual

The operator shall provide an Operations Manual in accordance with OPS 3, Subpart P for the use and guidance of operations personnel.

OPS 3.205 Competence of Operations Personnel

The operator shall ensure that all personnel assigned to, or directly involved in, ground and flight operations are properly instructed, have demonstrated their abilities in their particular duties and are aware of their responsibilities and the relationship of such duties to the operation as a whole.

OPS 3.207 Flight Dispatcher

(a) When the Authority requires that a flight dispatcher, employed in conjunction with an approved method of control and supervision of flight operations, be licensed, that flight dispatcher shall be licensed in accordance with the provisions of CAR LIC.

(b) In accepting proof of qualifications other than the option of holding of a flight dispatcher licence, the Authority, in accordance with the approved method of control and supervision of flight operations, shall require that, as a minimum, such persons meet the requirements specified in CAR LIC for the flight dispatcher licence.

(c) A flight dispatcher in conjunction with a method of control and supervision of flight operations shall:

(1) assist the pilot-in-command in flight preparation and provide the relevant information;

(2) assist the commander in preparing the operational flight plan, flight plan to be filed;

(3) when applicable, assist the commander in preparing the preliminary flight plan, and submit it to a unit designated by the appropriate ATS authority;

(4) sign when applicable and file the flight plan to a unit designated by the appropriate ATS authority; and

(3) furnish the pilot-in-command while in flight, by appropriate means, with information which may be necessary for the safe conduct of the flight.

(d) A flight dispatcher shall not be assigned to duty unless that person has:

(1) satisfactorily completed the operator-specific training course that addresses all the specific components of its approved method of control and supervision of flight operations;

(2) made, within the preceding 12 months, at least a one way qualification flight in the flight crew compartment of helicopter over any area for which that individual is authorised to exercise flight supervision. The flight should include landings at as many aerodromes as practicable;

Note: For the purpose of the qualification flight, the flight dispatcher must be able to monitor the flight crew intercommunication system and radio communications, and be able to observe the actions of the flight crew.

(3) demonstrated to the operator a knowledge of:

(i) the contents of the operations manual;

(ii) the radio equipment in the helicopters used; and

(iii) the navigation equipment in the helicopters used;

(4) demonstrated to the operator a knowledge of the following details concerning operations for which the officer is responsible and areas in which that individual is authorised to exercise flight supervision:

(i) the seasonal meteorological conditions and the sources of meteorological information;

(ii) the effects of meteorological conditions on radio reception in the helicopters used;

(iii) the peculiarities and limitations of each navigation system which is used by the operation; and

(iv) the helicopter loading instructions;

(5) demonstrated to the operator knowledge and skills related to human performance relevant to dispatch duties; and

(6) demonstrated to the operator the ability to perform the duties specified in OPS 3.195.

(7) maintained complete familiarization with all features of the operation which are pertinent to such duties, including knowledge and skills related to human performance.

(e) A flight dispatcher should not be assigned to duty after 12 consecutive months of absence from such duty, unless the provisions of paragraph (d) above are met.

OPS 3.210 Establishment of Procedures

(a) The operator shall establish procedures and instructions, for each helicopter type, containing ground staff and crew members' duties for all types of operation on the ground and in flight. (See AMC OPS 3.210(a).)

(b) The operator shall establish a checklist system to be used by crew members for all phases of operation of the helicopter under normal, abnormal and emergency conditions as applicable, to ensure that the operating procedures in the Operations Manual, helicopter flight manual or other documents associated with the certificate of airworthiness, are followed. (See AMC OPS 3.210(b)). The design and utilisation of checklists shall observe Human Factors and CRM principles.

(c) The operator shall not require a crew member to perform any activities during critical phases of the flight other than those required for the safe operation of the helicopter.

(d) The operator shall provide operations staff and flight crew with an aircraft operating manual, for each aircraft type operated, containing;

(1) the normal, abnormal and emergency procedures relating to the operation of the aircraft;

(2) details of the aircraft systems and of the checklists to be used.

(e) The manual shall be easily accessible to the flight crew during all flight operations.

(f) The operator shall not permit a helicopter rotor to be turned under power for the purpose of flight without a qualified pilot at the controls.

(g) The operator shall provide appropriately specific training and procedures to be followed for all personnel, other than qualified pilots, who are likely to carry out the turning of a rotor under power for purposes other than flight. (see AC OPS 3.210(d)).

OPS 3.215 Use of Air Traffic Services

The operator shall ensure that Air Traffic Services are used for all flights whenever available.

OPS 3.220 Authorisation of Heliports by the Operator

(See AMC OPS 3.220)

The operator shall only authorise use of heliports that are adequate for the type(s) of helicopter and operation(s) concerned.

OPS 3.225 Heliport or Landing Location Operating Minima

(a) The operator shall specify heliport operating minima, established in accordance with OPS 3.430 for each departure, destination or alternate heliport or landing location authorised to be used in accordance with OPS 3.220.

(b) These minima shall not be lower than any that may be established for such heliports or landing locations by the State of the Aerodrome, except when specifically approved by that State.

(c) In establishing the operating minima for each heliport or landing location which will apply to any particular operation, the operator must take full account of:

(1) the type, performance and handling characteristics of the helicopter and any conditions or limitations stated in the flight manual;

(2) The composition of the flight crew, their competence and experience;

(3) The dimensions and characteristics of the FATOs/runways which may be selected for use, as well as the direction of approach;

(4) The adequacy and performance of the available visual and non-visual ground aids; (see AMC OPS 3.430(b)(4));

(5) The equipment available on the helicopter for the purpose of navigation, acquisition of visual references and/or control of the flight path during the approach, landing and the missed approach;

(6) The obstacles in the approach, missed approach and the climb-out areas required for the execution of contingency procedures and necessary clearance;

(7) The obstacle clearance altitude/height for the instrument approach procedures;

(8) The means to determine and report meteorological conditions;

(9) The conditions prescribed in the operations specifications; and

(10) Any minima that may be promulgated by the State of the Aerodrome.

(d) [To ensure that an adequate margin of safety is observed in determining whether or not an approach and landing can be safely carried out at each alternate heliport or landing location, the operator shall specify appropriate incremental values for height of cloud base and visibility, to be added to the operator's established heliport or landing location operating minima.]

OPS 3.230 Departure and Approach Procedures

(a) The operator shall use departure and approach procedures if specified by the State in which the heliport is located.

(b) Notwithstanding sub-paragraph (a) above, a commander may accept an ATC clearance to deviate from a published departure or arrival route, provided obstacle clearance criteria are observed and full account is taken of the operating conditions. The final approach must be flown visually or in accordance with the established instrument approach procedure.

(c) Different procedures to those required to be used in accordance with sub-paragraph (a) above may only be implemented by the operator provided they have been approved by the State in which the heliport is located, if required, and accepted by the Authority.

3.233 Instrument flight procedures

(a) One or more instrument approach procedures to serve each final approach and take-off area or heliport located in San Marino utilised for instrument flight operations shall be approved and promulgated by the Authority, or when located outside the territory of San Marino, by the State which is responsible for the heliport.

(b) All helicopters operated in accordance with IFR shall comply with the instrument approach procedures approved by the Authority for a heliport located San Marino, or by the State which is responsible for the heliport when located outside the territory of any State.

OPS 3.235 Noise Abatement Procedures

(a) The operator shall ensure that take-off and landing procedures take into account the need to minimise the effect of helicopter noise.

(b) In no case shall the mass at the start of take-off, or at the expected time of landing at the destination and at any alternate, exceed the relevant maximum mass at which compliance has been demonstrated with the applicable noise certification Standards of CAR 21, Subpart I, unless otherwise authorised in exceptional circumstances for a certain operating site where there is no noise disturbance problem, by the competent authority of the State in which the operating site is situated.

OPS 3.240 Routes and Areas of Operation

(a) [The operator shall ensure that a flight will not be commenced unless it has been ascertained by every reasonable means available that the ground and/or water facilities available and directly required on such flight, for the safe operation of the helicopter and the protection of the passengers, are adequate for the type of operation under which the flight is to be conducted and are adequately operated for this purpose.]

(b) The operator shall ensure that operations are only conducted along such routes or within such areas, for which:

(1) Ground facilities and services, including meteorological services, are provided which are adequate for the planned operation;

(2) The performance of the helicopter intended to be used is adequate to comply with minimum flight altitude requirements;

(3) The equipment of the helicopter intended to be used meets the minimum requirements for the planned operation;

(4) Appropriate maps and charts are available (OPS 3.135(a)(9) refers);

(5) For helicopters operated in Performance Class 3, surfaces are available which permit a safe forced landing to be executed, except when the helicopter has an approval to operate in accordance with Appendix 1 to OPS 3.005(e)

(6) For helicopters operated in Performance Class 3 and conducting Coastal Transit operations, Part C of the Operations Manual contains procedures to ensure that the width of the Coastal Corridor, and the equipment carried, is consistent with the conditions prevailing at the time (See AMC OPS 3.240(a)(6)).

(b) The operator shall ensure that operations are conducted in accordance with any restriction on the routes or the areas of operation, imposed by the Authority.

(c) The operator shall ensure that any inadequacy of facilities observed in the course of operations is reported to the authority responsible for them, without undue delay.

OPS 3.243 Operations in Areas with Specific Navigation Performance Requirements
(See AMC OPS 3.243)

The operator shall not operate a helicopter in defined areas, or a defined portion of specified airspace, based on Regional Air Navigation Agreements where a navigation specification for performance-based navigation has been prescribed unless approved to do so by the Authority (RNP/RNAV Approval). (See also OPS 3.865(c)(2).)

OPS 3.250 Establishment of Minimum Flight Altitudes
(See AMC OPS 3.250)

(a) The operator shall establish minimum flight altitudes and the methods to determine those altitudes for all route segments to be flown which provide the required terrain clearance taking into account the requirements of OPS 3, Subparts F to I.

(b) The method for establishing minimum flight altitudes must be approved by the Authority.

(c) The operator shall be permitted to establish minimum flight altitudes for those routes flown for which minimum flight altitudes have been established by the State flown over or the responsible State, provided that they shall not be less than those established by that State, unless specifically approved.

(d) The operator shall specify the method by which it is intended to determine minimum flight altitudes for operations conducted over routes for which minimum flight altitudes have not been established by the State flown over, or the responsible State, and shall include this method in the operations manual.

(e) The minimum flight altitudes determined in accordance with the above method shall not be lower than specified in CAR OPS 0.

(f) Where minimum flight altitudes established by States over flown are higher than those established by the operator, the higher values shall apply.

(g) The operator shall take into account the probable effects of the following factors on the safety of the operation in question when establishing minimum flight altitudes:

(1) The accuracy and reliability with which the position of the helicopter can be determined;

(2) The inaccuracies in the indications of the altimeters used;

(3) The characteristics of the terrain (e.g. sudden changes in the elevation) along the routes or in the areas where operations are to be conducted.

(4) The probability of encountering unfavourable meteorological conditions (e.g. severe turbulence and descending air currents); and

(5) Possible inaccuracies in aeronautical charts; and

(6) airspace restrictions.

(h) In fulfilling the requirements prescribed in sub-paragraph (d) above due consideration shall be given to:

(1) Corrections for temperature and pressure variations from standard values;

(2) The ATC requirements; and

(3) Any contingencies along the planned route.

OPS 3.255 Fuel Policy
(See AMC OPS 3.255)

(a) A flight shall not be commenced unless, taking into account both the meteorological conditions and any delays that are expected in flight, the helicopter carries sufficient fuel and oil to ensure that it can safely complete the flight. In addition, a reserve shall be carried to provide for contingencies, such as loss of pressurisation, engine failure and any other condition that may delay the landing of the helicopter or increase fuel and/or oil consumption.

(b) VFR Operations

The fuel and oil carried in order to comply with (a) shall, in the case of VFR operations, be at least the amount to allow the helicopter to:

(1) fly to the landing site to which the flight is planned;

(2) have final reserve fuel to fly thereafter for a period of 20 minutes at best-range speed; and

(3) [have an additional amount of fuel, to provide for the increased consumption on the occurrence of any of the potential contingencies specified in the operations manual. (See AMC OPS 3.255)]

(c) IFR Operations

The fuel and oil carried in order to comply with (a) shall, in the case of IFR operations, be at least the amount to allow the helicopter:

(1) When an alternate is not required, to fly to and execute an approach at the heliport or landing location to which the flight is planned, and thereafter to have:

(i) final reserve fuel to fly 30 minutes at holding speed at 450 m (1 500 ft) above the destination heliport or landing location under standard temperature conditions and approach and land; and

(ii) an additional amount of fuel, to provide for the increased consumption on the occurrence of any of the potential contingencies specified in the operations manual. (See AMC OPS 3.255)]

(2) When an alternate is required, to fly to and execute an approach, and a missed approach, at the heliport or landing location to which the flight is planned, and thereafter:

(i) to fly to and execute an approach at the alternate specified in the flight plan; and then

(ii) have final reserve fuel to fly for 30 minutes at holding speed at 450 m (1 500 ft) above the alternate under standard temperature conditions, and approach and land; and

(iii) [to have an additional amount of fuel, to provide for the increased consumption on the occurrence of any of the potential contingencies in the operations manual. (See AMC OPS 3.255)]

(3) When no alternate heliport or landing location is available (e.g. the destination is isolated), sufficient fuel shall be carried to enable the helicopter to fly to the destination to which the flight is planned and thereafter for a period acceptable to the Authority that will, based on geographic and environmental considerations, enable a safe landing to be made.

(d) The operator shall ensure that the pre-flight calculation of usable fuel required for a flight includes:

(1) Taxi fuel;

(2) Trip fuel;

(3) Reserve fuel consisting of:

(i) Contingency fuel (see AMC OPS 3.255)

(ii) Alternate fuel, if a destination alternate is required (This does not preclude selection of the departure heliport as the destination alternate);

(iii) Final reserve fuel; and

(iv) Additional fuel, if required by the type of operation (e.g. isolated heliports); and

(4) Extra fuel if required by the commander.

(e) The operator shall ensure that the planning of flights is only based upon:

(1) Procedures and data contained in or derived from the Operations Manual or current helicopter specific data; and

(2) The operating conditions under which the flight is to be conducted including:

(i) Realistic helicopter fuel consumption data;

(ii) Anticipated masses;

(iii) Expected meteorological conditions; and

(iv) Air Traffic Services procedures and restrictions.

(f) The use of fuel after flight commencement for purposes other than originally intended during pre-flight planning shall require a re-analysis and, if applicable, adjustment of the planned operation.

(g) The operator shall ensure that in-flight re-planning procedures for calculating usable fuel required when a flight has to proceed along a route or to a destination other than originally planned include:

(1) Trip fuel for the remainder of the flight;

(2) Reserve fuel consisting of:

(i) Contingency fuel;

(ii) Alternate fuel, if a destination alternate is required. (This does not preclude selection of the departure heliport as the destination alternate.);

(iii) Final reserve fuel; and

(iv) Additional fuel, if required by the type of operation (e.g. isolated heliports); and

(3) Extra fuel if required by the commander.

(h) The operator shall maintain fuel and oil records to enable the Authority to ascertain that, for each flight, the above requirements have been complied with.

OPS 3.260 Carriage of Persons with Reduced Mobility
(See AMC OPS 3.260)

(a) The operator shall establish procedures for the carriage of Persons with Reduced Mobility (PRMs).

(b) The operator shall ensure that PRMs are not allocated, nor occupy, seats where their presence could:

(1) Impede the crew in their duties;

(2) Obstruct access to emergency equipment; or

(3) Impede the emergency evacuation of the helicopter.

(c) The commander must be notified when PRMs are to be carried on board.

OPS 3.265 Carriage of Inadmissible Passengers, Deportees or Persons in Custody

The operator shall establish procedures for the transportation of inadmissible passengers, deportees or persons in custody to ensure the safety of the helicopter and its occupants. The commander must be notified when the above-mentioned persons are to be carried on board.

OPS 3.270 Stowage of Baggage and Cargo

(See Appendix 1 to OPS 3.270)
(See AMC OPS 3.270)

(a) The operator shall establish procedures to ensure that only such hand baggage and cargo is carried into a helicopter and taken into the passenger cabin as can be adequately and securely stowed.

(b) The operator shall establish procedures to ensure that all baggage and cargo on board, which might cause injury or damage, or obstruct aisles and exits if displaced, is stowed so as to prevent movement.

OPS 3.280 Passenger Seating

(See AC No. 1 to OPS 3.280)
(See AC No. 2 to OPS 3.280)

The operator shall establish procedures to ensure that passengers are seated where, in the event that an emergency evacuation is required, they may best assist and not hinder evacuation from the helicopter.

OPS 3.285 Passenger Briefing

The operator shall ensure that:

(a) *General.*

(1) Passengers are verbally briefed about safety matters, parts or all of which may be given by an audio-visual presentation.

(2) Passengers are provided with a safety briefing card on which picture type instructions indicate the operation of emergency equipment and exits likely to be used by passengers.

(b) *Before take-off*

(1) Passengers are briefed on principal emergency equipment carried for collective use and the following items if applicable:

(i) Smoking regulations;

(ii) Back of the seat to be in the upright position and tray table stowed;

(iii) Location of emergency exits;

(iv) Location and use of floor proximity escape path markings;

(v) Stowage of hand baggage;

(vi) Restrictions on the use of portable electronic devices; and

(vii) The location and the contents of the safety briefing card.

(2) Passengers receive a demonstration of the following:

(i) The use of safety belts and/or safety harnesses, including how to fasten and unfasten the safety belts and/or safety harnesses;

(ii) The location and use of oxygen equipment if required (OPS 3.770 and OPS 3.775 refer). Passengers must also be briefed to extinguish all smoking materials when oxygen is being used; and

(iii) The location and use of life jackets, life-rafts and survival suits if required (OPS 3.825, 3.827 and 3.830 refer).

(c) *After take-off*

(1) Passengers are reminded of the following if applicable:

(i) Smoking regulations; and

(ii) Use of safety belts and/or safety harnesses.

(d) *Before landing*

(1) Passengers are reminded of the following if applicable:

(i) Smoking regulations;

(ii) Use of safety belts and/or safety harnesses;

(iii) Back of the seat to be in the upright position and tray table stowed;

(iv) Re-stowage of hand baggage; and

(v) Restrictions on the use of portable electronic devices.

(e) *After landing*

Passengers are reminded of the following:

(1) Smoking regulations; and

(2) Use of safety belts and/or safety harnesses.

(f) In an emergency during flight, passengers are instructed in such emergency action as may be appropriate to the circumstances.

OPS 3.290 Flight Preparation

(a) The operator shall ensure that an operational flight plan is completed for each intended flight.

(b) The commander shall not commence a flight unless he is satisfied that:

(1) The helicopter is airworthy;

(2) The helicopter configuration is in accordance with the Configuration Deviation List (CDL);

(3) The instruments and equipment required for the flight to be conducted, in accordance with OPS 3, Subparts K and L, are available;

(4) The instruments and equipment are in operable condition except as provided in the MEL;

(5) Those parts of the operations manual which are required for the conduct of the flight are available;

(6) The documents, additional information and forms required to be available by OPS 3.125 and OPS 3.135 are on board;

(7) Current maps, charts and associated documents or equivalent data are available to cover the intended operation of the helicopter including any diversion which may reasonably be expected;

(8) Ground facilities and services required for the planned flight are available and adequate;

(9) The provisions specified in the operations manual in respect of fuel, oil and oxygen requirements, minimum safe altitudes, heliport operating minima and availability of alternate heliports, where required, can be complied with for the planned flight;

(10) The load is properly distributed and safely secured;

(11) The mass of the helicopter, at the commencement of take-off, will be such that the flight can be conducted in compliance with OPS 3, Subparts F to I as applicable; and

(12) Any operational limitation in addition to those covered by sub-paragraphs (9) and (11) above can be complied with.

OPS 3.295 Pre-Flight Selection of Heliports

(a) The operator shall establish procedures for the selection of destination and/or alternate heliports in accordance with OPS 3.220 when planning a flight.

(b) The commander must select a take-off alternate within one hour flight time at normal cruise speed for a flight under instrument meteorological conditions if it would not be possible to return to the heliport of departure due to meteorological reasons.

(c) On a VFR flight a commander shall not commence take-off unless current meteorological reports or a combination of current reports and forecasts indicate that the meteorological conditions along the route or that part of the route to be flown under VFR will, at the appropriate time, be such as to render compliance with these regulations possible.

(d) In addition to (c) above, for a flight to be conducted in accordance with the Instrument Flight Rules or when flying VFR and navigating by means other than by reference to visual landmarks, the commander shall specify at least one alternate in the operational flight plan unless:

(1) The destination is a coastal heliport (See AMC OPS 3.295(c)(1) and AMC OPS 3.295(c)(1)); or

(2) For a flight to any other land destination, the duration of the flight and the meteorological conditions prevailing are such that, at the estimated time of arrival at the heliport of intended landing, an approach and landing may be made under visual meteorological conditions as prescribed in CAR OPS 0; or

(3) The heliport of intended landing is isolated and no alternate is available. A Point of No Return (PNR) shall be determined.

(e) [A flight to be conducted in accordance with IFR shall not be commenced unless information is available which indicates that conditions at one alternate heliport or, when no alternate heliport is required, at the destination heliport or landing location, will, at the estimated time of arrival, be at or above the heliport operating minima.]

(f) In addition to (e) above, for a flight to be conducted in accordance with the Instrument Flight Rules, the commander shall specify at least one alternate in the operational flight plan unless:

(1) The destination is a coastal heliport (See AMC OPS 3.295(c)(1) and AMC OPS 3.295(c)(1)); or

(2) For a flight to any other land destination, the duration of the flight and the meteorological conditions prevailing are such that, at the estimated time of arrival at the heliport of intended landing, an approach and landing may be made under visual meteorological conditions as prescribed in CAR OPS 0; or

(3) The heliport of intended landing is isolated and no alternate is available. A Point of No Return (PNR) shall be determined.

(g) The operator must select two destination alternatives when:

(1) The appropriate weather reports or forecasts for the destination, or any combination thereof, indicate that during a period commencing 1 hour before and ending 1 hour after the estimated time of arrival the weather conditions will be below the applicable planning minima; or

(2) no meteorological information is available for the destination.

(h) Use of Offshore destination alternate heliports

(1) The Authority, as the State of the Operator, shall issue a specific approval for the operational use of offshore destination alternate heliports.

(2) A helideck may be specified as an offshore destination alternate heliport when the closest onshore destination alternate is not within achievable range of the helicopter. Specification is subject to the following conditions:

(i) a helideck shall only be used as an offshore destination alternate heliport after the PNR and when an onshore aerodrome is not geographically available. Prior to the PNR, an onshore destination alternate aerodrome shall be used;

(ii) the operator shall have a risk assessment process detailed in the operations manual for the utilization of helidecks as offshore destination alternate heliports and conduct such an assessment prior to their selection and use;

(iii) the operator has established specific procedures and appropriate training programmes in the operations manual for offshore destination alternate heliport operations;

(iv) the operator shall have pre-surveyed, and assessed for suitability, any helideck intended to be used as an offshore destination alternate heliport and with the information published in an appropriate form in the operations manual (including the orientation of the helideck);

(v) the helicopter shall have a one engine inoperative (OEI) landing capability at the offshore alternate heliport; and

(vi) the MEL shall contain specific provisions for this type of operation.

(3) The use of an offshore alternate heliport should be restricted to helicopters which can achieve OEI in ground effect (IGE) hover at an appropriate power rating at the offshore alternate heliport.

(4) Where the surface of the helideck, or prevailing conditions (especially wind velocity), precludes an OEI IGE, OEI out of ground effect (OGE) hover performance at an appropriate power rating should be used to compute the landing mass.

(5) The landing mass should be calculated from graphs provided in the operations manual. When calculating 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.

(6) The planned landing mass of the helicopter, including crew, passengers, baggage, cargo and 30 minutes final reserve fuel, should not exceed the OEI landing mass at the time of approach to the offshore alternate heliport.

(7) The operator's risk assessment process shall take into consideration at least the following:

(i) the type and circumstances of the operation;

(ii) the area over which the operation is being conducted, including sea conditions, survivability and search and rescue facilities;

(iii) the availability and suitability of the helideck for use as an offshore destination alternate heliport including the physical characteristics, dimensions, configuration and obstacle clearance, the effect of wind direction, strength and turbulence;

(iv) the type of helicopter(s) being used;

(v) mechanical reliability of the helicopter engines and critical control systems and components;

(vi) the training and operational procedures, including mitigation of the consequences of helicopter technical failures;

(vii) specific mitigation measures;

(viii) helicopter equipment;

(ix) spare payload capacity for the carriage of additional fuel;

(x) weather minima, taking into account the accuracy and reliability of meteorological information; and

(xi) communications and aircraft tracking facilities.

Note 1: The landing technique specified in the flight manual following control system failure may preclude the nomination of certain helidecks as alternate heliports.

Note 2: Specific mitigation measures may include equipment improvements such as a sea state certification standard, safety equipment and tracking equipment.

(8) Training programmes should ensure that the requirements of OPS 3, Subpart N are complied with, such as, but not limited to, route qualification, flight preparation, concept of operations with offshore alternates and criteria for their use. Training programme refers to the training for pilots and other relevant personnel (including as required meteorological observers and helideck personnel) involved in such operations.

(9) When the use of an offshore alternate heliport is planned, the meteorological observations, both at the offshore destination and the offshore alternate heliport, should be taken by an observer acceptable to the designated meteorological authority.

Note: Appropriate automatic weather stations may satisfy this requirement.

(10) Offshore alternates should not be used for payload enhancement.

(11) To demonstrate the mechanical reliability of critical control systems and critical components of the helicopter, the operator should install and utilize a health and usage monitoring system with tailored criteria for this type of operation.

(12) The heliport operating minima for the offshore destination and offshore destination alternate heliport required under OPS 3.225(c) shall make due allowance for the availability and reliability of weather information and the geographic environment.

(13) The operator shall specify cloud ceiling and visibility criteria relevant to the helideck elevation and location.

(14) To use an offshore destination alternate helideck, it shall be ensured that, within 60 NM of the destination helideck and alternate helideck, fog is not present, nor forecasted, during the period commencing one hour before and ending one hour after the expected time of arrival at the offshore destination or alternate helideck.

(15) An offshore alternate should be more than 30 NM from the original destination to reduce the likelihood of a localized weather event precluding landings at both the destination and the alternate.

(16) The operator shall ensure that, before passing the PNR, the following actions have been completed:

(i) confirmation that navigation to the destination and offshore alternate heliport is assured;

(ii) radio contact with the destination and offshore alternate heliport (or master station) is established;

(iii) the landing forecast at the destination and offshore alternate heliport are obtained and confirmed to be at or above the required minima;

(iv) the requirements for OEI landing are verified against the latest reported weather conditions to ensure that they can be met; and

(v) to the extent possible, having considered information on current and forecast use of the offshore destination alternate heliport, and on conditions prevailing, the availability of the offshore alternate heliport will be guaranteed by the helideck provider until the landing at the destination, or the offshore destination alternate heliport, is achieved.

OPS 3.297 Planning Minima for IFR Flights

(a) Planning minima for take-off alternates. The operator shall not select a heliport as a take-off alternate heliport unless the appropriate weather reports or forecasts and aerodrome or landing forecasts, or any combination thereof indicate that, during a period commencing 1 hour before and ending 1 hour after the estimated time of arrival at the take-off alternate heliport, the weather conditions will be at or above the applicable landing minima specified in accordance with OPS 3.225. The ceiling must be taken into account when the only approaches available are non-precision approaches. Any limitation related to one engine inoperative operations must be taken into account.

(b) Planning minima for destination and destination alternate heliports. The operator shall only select the destination heliport and/or destination alternate heliport(s) when the appropriate weather reports or forecasts and aerodrome or landing forecasts, or any combination thereof, indicate that, during a period commencing 1 hour before and ending 1 hour after the estimated time of arrival at the heliport, the weather conditions will be at or above the applicable planning minima as follows:

(1) Except as provided in OPS 3.295(e), planning minima for a destination heliport will be:

(i) RVR/visibility specified in accordance with OPS 3.225; and

(ii) For a non-precision approach, the ceiling at or above MDH; and

(2) Planning minima for destination alternate heliport(s):

Table 1 Planning Minima Destination Alternates

Type of Approach	Planning Minima
Cat II and III	Cat I (Note 1)
Cat I	Plus 200 ft/400 m visibility
Non-Precision	Non-Precision (Note 2) plus 200 ft/400 m visibility

Note 1: RVR.

Note 2: The ceiling must be at or above the MDH.

OPS 3.300 Submission of ATS Flight Plan
(See AMC OPS 3.300)

The operator shall ensure that a flight is not commenced unless an ATS flight plan has been submitted, or adequate information has been deposited, or transmitted as soon as possible after take-off, in order to permit alerting services to be activated if required.

OPS 3.305 Refuelling with Passengers On-board or Rotors Turning
(See AMC OPS 3.305)

(a) A helicopter shall not be refuelled, rotors stopped or turning, when:

(1) passengers are embarking or disembarking; or

(2) when oxygen is being replenished.

(b) When the helicopter is refuelled with passengers on board, rotors stopped or turning, it shall be properly attended by sufficient qualified personnel, ready to initiate and direct an evacuation of the helicopter by the most practical, safe and expeditious means available. In order to achieve this:

(1) the flight crew shall ensure that the passengers are briefed on what actions to take if an incident occurs during refuelling;

(2) a constant two-way communication shall be maintained by the helicopter's inter-communication system or other suitable means between the ground crew supervising the refuelling and the qualified personnel on board the helicopter; and

Note: Caution needs to be exercised when using radios for this purpose due to the potential for stray currents and radio-induced voltages.

(3) during an emergency shutdown procedure, the flight crew shall ensure that any personnel or passengers outside the helicopter are clear of the rotor area.

(c) The operator shall establish procedures and specify conditions under which such refuelling with may be carried out.

(d) Operational procedures should ensure that the following precautions are taken:

(1) only Jet A fuel is used;

(2) door(s) on the refuelling side of the helicopter remain closed unless these are the only suitable exits;

(3) door(s) on the non-refuelling side of the helicopter remain open, weather permitting unless otherwise specified in the RFM;

(4) firefighting facilities of the appropriate scale be positioned so as to be immediately available in the event of a fire;

(5) if the presence of fuel vapour is detected inside the helicopter, or any other hazard arises during refuelling, fuelling be stopped immediately;

(8) the ground or deck area beneath the exits intended for emergency evacuation be kept clear;

(9) seat belts should be unfastened to facilitate rapid egress; and

(10) with rotors turning, only ongoing passengers should remain on board.

(e) A helicopter shall not be refuelled with AVGAS (aviation gasoline) or wide-cut type fuel or a mixture of these types of fuel, when passengers are on board.

Note: Additional precautions are required when refuelling with fuels other than aviation kerosene or when refuelling results in a mixture of aviation kerosene with other aviation turbine fuels, or when an open line is used.

OPS 3.307 Defueling

A helicopter shall not be defueled at any time when:

(a) passengers remain on board; or

(b) passengers are embarking or disembarking; or

(c) oxygen is being replenished.

OPS 3.310 Crew Members at Stations

(a) *Flight crew members*

(1) During taxi, take-off and landing each flight crew member required to be on duty in the cockpit shall be at his station.

(2) During all other phases of flight each flight crew member required to be on duty shall remain at his station unless his absence is necessary for the performance of his duties in connection with the operation, or for physiological needs, provided at least one suitably qualified pilot remains at the controls of the helicopter at all times.

(b) *Cabin crew members*. On any deck of the helicopter that is occupied by passengers, required cabin crew members shall be seated at their assigned stations during taxi, take-off and landing, and whenever deemed necessary by the commander in the interest of safety. (See AMC OPS 3.310(b).)

OPS 3.320 Seats, Safety Belts and Harnesses

(a) *Crew members*

(1) During taxi, take-off and landing, and whenever deemed necessary by the commander in the interest of safety, each crew member shall be properly secured by all safety belts and harnesses provided.

(2) During other phases of the flight each flight crew member in the cockpit shall keep his safety belt fastened while at his station.

(b) *Passengers*

(1) Before take-off and landing, and during taxiing, and whenever deemed necessary in the interest of safety, the commander shall ensure that each passenger on board occupies a seat or berth with his safety belt, or harness where provided, properly secured.

(2) The operator shall make provision for, and the commander shall ensure that multiple occupancy of helicopter seats may only be allowed on specified seats and does not occur other than by one adult and one infant who is properly secured by a supplementary loop belt or other restraint device.

OPS 3.325 Securing of Passenger Cabin and Galley(s)

(a) The operator shall establish procedures to ensure that before taxiing, take-off and landing all exits and escape paths are unobstructed.

(b) The commander shall ensure that before take-off and landing, and whenever deemed necessary in the interest of safety, all equipment and baggage is properly secured.

OPS 3.330 Accessibility of Emergency Equipment

(a) The operator shall establish procedures to ensure that when operating overwater in Performance Class 3, account is taken of the duration of the flight and conditions to be encountered when deciding if the lifejackets should be worn by all occupants.

(b) The commander shall ensure that relevant emergency equipment remains easily accessible for immediate use.

OPS 3.335 Smoking On-board

(a) The commander shall ensure that no person on board is allowed to smoke:

(1) Whenever deemed necessary in the interest of safety;

(2) While the helicopter is on the ground unless specifically permitted in accordance with procedures defined in the Operations Manual;

(3) Outside designated smoking areas, in the aisle(s) and in the toilet(s);

(4) In cargo compartments and/or other areas where cargo is carried which is not stored in flame resistant containers or covered by flame resistant canvas; and

(5) In those areas of the cabin where oxygen is being supplied.

OPS 3.340 In-Flight Meteorological Conditions

(a) A flight shall not be continued towards the heliport of intended landing, unless the latest available information indicates that at the expected time of arrival, a landing can be affected at that heliport, or at least one destination alternate heliport, in compliance with VFR or the operating minima established in accordance with OPS 3.297.

(b) A flight to a helideck or elevated heliport shall not be operated when the mean wind speed at the helideck or elevated heliport is reported as 60 knots or more.

OPS 3.345 Ice and Other Contaminants – Ground Procedures

(a) The operator shall establish procedures to be followed when ground de-icing and anti-icing and related inspections of the helicopter(s) are necessary.

(b) A flight to be planned or expected to operate in suspected or known ground icing conditions shall not be commenced unless the helicopter has been inspected for icing and, if necessary, has been given appropriate de-icing/anti-icing treatment. Accumulation of ice or other naturally occurring contaminants shall be removed so that the helicopter is kept in an airworthy condition prior to take-off.

(c) A commander shall not commence take-off unless the external surfaces are clear of any deposit which might adversely affect the performance and/or controllability of the helicopter except as permitted in the Helicopter Flight Manual.

OPS 3.346 Ice and Other Contaminants – Flight Procedures

(a) When appropriate, the operator shall establish procedures for flights in expected or actual icing conditions. (See AC OPS 3.346 and OPS 3.675)

(b) A commander shall not commence a flight nor intentionally fly into expected or actual icing conditions unless the helicopter is certificated and equipped to cope with such conditions.

OPS 3.350 Fuel and Oil Supply

A commander shall not commence a flight unless he is satisfied that the helicopter carries at least the planned amount of fuel and oil to complete the flight safely, taking into account the expected operating conditions.

OPS 3.355 Take-off Conditions

Before commencing take-off, a commander must satisfy himself that, according to the information available to him, the weather at the heliport and the condition of the FATO intended to be used should not prevent a safe take-off and departure.

OPS 3.360 Application of Take-off Minima

Before commencing take-off, a commander must satisfy himself that the RVR/visibility and the ceiling in the take-off direction of the helicopter is equal to or better than the applicable minimum.

OPS 3.365 Minimum Flight Altitudes

(See AMC OPS 3.250)

The pilot flying shall not descend below specified minimum altitudes except when necessary for take-off or landing, or when descending in accordance with procedures approved by the Authority.

OPS 3.370 Simulated Abnormal Situations in Flight

The operator shall establish procedures to ensure that abnormal or emergency situations requiring the application of part or all of abnormal or emergency procedures and simulation of IMC by artificial means, are not simulated during commercial air transportation flights.

OPS 3.375 In-flight Fuel Management

(See Appendix 1 to OPS 3.375)

(a) The operator shall establish policies and procedures, approved by the Authority, to ensure that in-flight fuel checks and fuel management are performed.

(b) The Commander shall monitor the amount of usable fuel remaining on board to ensure it is not less than the fuel required to proceed to a landing site where a safe landing can be made with the planned final reserve fuel remaining.

(c) The pilot-in-command shall advise ATC of a minimum fuel state by declaring MINIMUM FUEL when, having committed to land at a specific landing site, the pilot calculates that any change to the existing clearance to that landing site, or other air traffic delays, may result in landing with less than the planned final reserve fuel.

Note 1: The declaration of MINIMUM FUEL informs ATC that all planned landing site options have been reduced to a specific landing site of intended landing that no precautionary landing site is available, and any change to the existing clearance, or air traffic delays, may result in landing with less than the planned final reserve fuel. This is not an emergency situation but an indication that an emergency situation is possible should any additional delay occur.

Note 2: A precautionary landing site refers to a landing site, other than the site of intended landing, where it is expected that a safe landing can be made prior to the consumption of the planned final reserve fuel shall declare an emergency when the actual usable fuel on board is less than final reserve fuel.

(d) The Commander shall declare a situation of fuel emergency by broadcasting MAYDAY MAYDAY MAYDAY FUEL, when the usable fuel estimated to be available upon landing at the nearest landing site where a safe landing can be made is less than the required final reserve fuel.

Note 1: The planned final reserve fuel is the minimum amount of fuel required upon landing at any landing site. The declaration of MAYDAY MAYDAY, MAYDAY FUEL informs ATC that all available landing options have been reduced to a specific site and a portion of the final reserve fuel may be consumed prior to landing.

Note 2: The pilot estimates with reasonable certainty that the fuel remaining upon landing at the nearest safe landing site will be less than the final reserve fuel taking into consideration the latest information available to the pilot, the area to be overflown (i.e. with respect to the availability of precautionary landing areas), meteorological conditions and other reasonable contingencies.

OPS 3.385 Use of Supplemental Oxygen

A commander shall ensure that flight crew members engaged in performing duties essential to the safe operation of a helicopter in flight use supplemental oxygen continuously whenever cabin altitude exceeds 10000 ft for a period in excess of 30 minutes and whenever the cabin altitude exceeds 13000 ft.

OPS 3.395 Ground Proximity Detection

When undue proximity to the ground is detected by any flight crew member or by a ground proximity warning system, the commander or the pilot to whom conduct of the flight has been delegated shall ensure that corrective action is initiated immediately to establish safe flight conditions.

OPS 3.398 Use of Airborne Collision Avoidance System (ACAS)

(See AC OPS 3.398)

(a) The operator shall establish procedures to ensure that when ACAS is installed and serviceable, it shall be used in flight in a mode that enables Traffic Advisories (TA) to be displayed.

(b) Operators of aircraft equipped with ACAS shall establish standards of training and operation before authorising crews to use ACAS.

OPS 3.400 Approach and Landing Conditions

(See AMC OPS 3.400)

Before commencing an approach to land, the commander must satisfy himself that, according to the information available to him, the weather at the heliport and the condition of the FATO intended to be used should not prevent a safe approach, landing or missed approach, having regard to the performance information contained in the Operations Manual.

OPS 3.405 Commencement and Continuation of Approach

(a) The commander or the pilot to whom conduct of the flight has been delegated may commence an instrument approach regardless of the reported RVR/Visibility but the approach shall not be continued below 300 m (1 000 ft) above the heliport elevation or into the final approach segment unless the reported visibility or controlling RVR is at or above the heliport operating minima.

(b) Where RVR is not available, RVR values may be derived by converting the reported visibility in accordance with Appendix 1 to OPS 3.430, sub-paragraph (h).

(c) If, after entering the final approach segment or after descending below 300 m (1 000 ft) above the heliport, the reported RVR/Visibility falls below the specified minimum, the approach may continue to DA/H or MDA/H. In any case, a helicopter shall not continue its approach-to land beyond a point at which the limits of the heliport operating minima would be infringed.

(d) If the MDA/H is at or above 1 000 ft above the heliport, the operator shall establish a height, for each approach procedure, below which the approach shall not be continued if the RVR/visibility is less than the applicable minima.

(e) The approach may be continued below DA/H or MDA/H and the landing may be completed provided that the required visual reference is established at the DA/H or MDA/H and is maintained.

OPS 3.415 Journey Log

A commander shall ensure that the Journey log is completed.

OPS 3.420 Occurrence Reporting

(a) Terminology

(1) *Incident.* An occurrence, other than an accident, associated with the operation of a helicopter which affects or could affect the safety of operation.

(2) *Serious Incident.* An incident involving circumstances indicating that there was a high probability of an accident and associated with the operation of a helicopter which takes place between the time any person boards the helicopter with the intention of flight until such time as all such persons have disembarked.

(3) *Accident.* An occurrence associated with the operation of a helicopter which takes place between the time any person boards the helicopter with the intention of flight until such time as all persons have disembarked, in which:

(i) a person is fatally or seriously injured as a result of:

(A) being in the helicopter;

(B) direct contact with any part of the helicopter, including parts which have become detached from the helicopter; or,

(C) direct exposure to jet blast or rotor downwash;

except when the injuries are from natural causes, self-inflicted or inflicted by other persons, or when the injuries are to stowaways hiding outside the areas normally available to the passengers and crew: or

(ii) the helicopter sustains damage or structural failure which adversely affects the structural strength, performance or flight characteristics; and would normally require major repair or replacement of the affected component; except for engine failure or damage, when the damage is limited to the engine, its cowlings or accessories; or for damage limited to, antennas, tyres, brakes, fairings, small dents or puncture holes in the helicopter skin: or

(iii) the helicopter is missing or is completely inaccessible.

(b) *Incident Reporting.* The operator shall establish procedures for reporting incidents taking into account responsibilities described below and circumstances described in sub-paragraph (d) below.

(1) OPS 3.085(b) specifies the responsibilities of crew members for reporting incidents that endanger, or could endanger, the safety of operation.

(2) The commander or the operator of a helicopter shall submit a report to the Authority of any incident that endangers or could endanger the safety of operation.

(3) Reports shall be despatched within 72 hours of the time when the incident was identified unless exceptional circumstances prevent this.

(4) A commander shall ensure that all known or suspected technical defects and all exceedences of technical limitations occurring while he was responsible for the flight are recorded in the helicopter technical log. If the deficiency or exceedence of technical limitations endangers or could endanger the safety of operation, the commander must in addition initiate the submission of a report to the Authority in accordance with paragraph (b)(2) above.

(5) In the case of incidents reported in accordance with sub- paragraphs (b)(1), (b)(2) and (b)(3) above, arising from, or relating to, any failure, malfunction or defect in the helicopter, its equipment or any item of ground support equipment, or which cause or might cause adverse effects on the continuing airworthiness of the helicopter, the operator must also inform the organisation responsible for the design or the supplier or, if applicable, the organisation responsible for continued airworthiness, at the same time as a report is submitted to the Authority.

(c) *Accident and Serious Incident Reporting.* The operator shall establish procedures for reporting accidents and serious incidents taking into account responsibilities described below and circumstances described in sub-paragraph (d) below.

(1) A commander shall notify the operator of any accident or serious incident occurring while he was responsible for the flight. In the event that the commander is incapable of providing such notification, this task shall be undertaken by any other member of the crew if they are able to do so, note being taken of the succession of command specified by the operator.

(2) The operator shall ensure that the Authority in the State of the operator, the nearest appropriate Authority (if not the Authority in the State of the operator), and any other organisation required by the State of the operator to be informed, are notified by the quickest means available of any accident or serious incident and, in the case of accidents only, at least before the helicopter is moved unless exceptional circumstances prevent this.

(3) The commander or the operator of a helicopter shall submit a report to the Authority in the State of the operator within 72 hours of the time when the accident or serious incident occurred.

(d) *Specific Reports*. Occurrences for which specific notification and reporting methods must be used are described below;

(1) *Air Traffic Incidents*. A commander shall without delay notify the air traffic service unit concerned of the incident and shall inform them of his intention to submit an air traffic incident report after the flight has ended whenever a helicopter in flight has been endangered by:

(i) A near collision with any other flying device;

(ii) Faulty air traffic procedures or lack of compliance with applicable procedures by air traffic services or by the flight crew;

(iii) Failure of air traffic services facilities.

In addition, the commander shall notify the Authority of the incident.

(2) *Airborne Collision Avoidance System Resolution Advisory.* A commander shall notify the air traffic service unit concerned and submit an ACAS report to the Authority whenever a helicopter in flight has manoeuvred in response to an ACAS Resolution Advisory.

(3) *Bird Hazards and Strikes*

(i) A commander shall immediately inform the local air traffic service unit whenever a potential bird hazard is observed.

(ii) If he is aware that a bird strike has occurred, a commander shall submit a written bird strike report after landing to the Authority whenever a helicopter for which he is responsible suffers a bird strike that results in significant damage to the helicopter or the loss or malfunction of any essential service. If the bird strike is discovered when the commander is not available, the operator is responsible for submitting the report.

(4) *In-flight Emergencies with Dangerous Goods on Board.* If an in-flight emergency occurs and the situation permits, a commander shall inform the appropriate air traffic service unit of any dangerous goods on board. After the helicopter has landed, the commander shall, if the occurrence has been associated with and was related to the transport of dangerous goods, comply also with the reporting requirements specified in OPS 3.1225.

(5) *Unlawful Interference* Following an act of unlawful interference on board a helicopter, the commander or, in his absence, the operator shall submit a report as soon as practicable to the local Authority and to the Authority in the State of the operator. (See also OPS 3.1245)

(6) *Encountering Potential Hazardous Conditions.* A commander shall notify the appropriate air traffic services unit as soon as practicable whenever a potentially hazardous condition, such as;

(i) an irregularity in a ground or navigational facility;

(ii) a meteorological phenomenon or a volcanic ash cloud is encountered during flight; or

(iii) laser lighting directed at the helicopter affecting a pilot.

(7) These reports shall give such details as may be pertinent to the safety of other aircraft.

OPS 3.426 Flight Hours Reporting
(See AC OPS 3.426)

The operator shall make available to the Authority the hours flown for each helicopter operated during the previous calendar year.

Appendix 1 to OPS 3.270

Stowage of Baggage and Cargo

(a) Procedures established by the operator to ensure that hand baggage and cargo is adequately and securely stowed must take account of the following:

(1) Each item carried in a cabin must be stowed only in a location that is capable of restraining it;

(2) Mass limitations placarded on or adjacent to stowages must not be exceeded;

(3) Underseat stowages must not be used unless the seat is equipped with a restraint bar and the baggage is of such size that it may adequately be restrained by this equipment;

(4) Items must not be stowed in toilets or against bulkheads that are incapable of restraining articles against movement forwards, sideways or upwards and unless the bulkheads carry a placard specifying the greatest mass that may be placed there;

(5) Baggage and cargo placed in lockers must not be of such size that they prevent latched doors from being closed securely;

(6) Baggage and cargo must not be placed where it can impede access to emergency equipment; and

(7) Checks must be made before take-off, before landing, and whenever the fasten seat belts signs are illuminated or it is otherwise so ordered to ensure that baggage is stowed where it cannot impede evacuation from the aircraft or cause injury by falling (or other movement) as may be appropriate to the phase of flight.

Appendix 1 to OPS 3.375

In-flight Fuel Management

(a) *In-flight fuel checks.*

(1) A commander must ensure that fuel checks are carried out in flight at regular intervals. The remaining fuel must be recorded and evaluated to:

(i) Compare actual consumption with planned consumption;

(ii) Check that the remaining fuel is sufficient to complete the flight; and

(iii) Determine the expected fuel remaining on arrival at the destination.

(2) The relevant fuel data must be recorded.

(b) *In-flight fuel management.*

(1) If, as a result of an in-flight fuel check, the expected fuel remaining on arrival at the destination is less than the required alternate fuel plus final reserve fuel, the commander must:

(i) Divert; or

(ii) Replan the flight in accordance with OPS 3.295(d)(1) unless he considers it safer to continue to the destination provided that,

(2) At an on-shore destination, when two suitable, separate touchdown and lift-off areas are available and the weather conditions at the destination comply with those specified for planning in OPS 3.340(a)(2), the commander may permit alternate fuel to be used before landing at the destination.

(c) If, as a result of an in-flight fuel check on a flight to an isolated destination heliport, planned in accordance with AMC OPS 3.255 paragraph 3, the expected fuel remaining at the point of last possible diversion is less than the sum of:

(1) Fuel to divert to a heliport selected in accordance with OPS 3.295(b);

(2) Contingency fuel; and

(3) Final reserve fuel, a commander must:

(4) Divert; or

(5) Proceed to the destination provided that at on-shore destinations, two suitable, separate touchdown and lift-off areas are available at the destination and the expected weather conditions at the destination comply with those specified for planning in OPS 3.340(a)(2).

SUBPART E

ALL WEATHER OPERATIONS

OPS 3.430 Heliport or Landing Location Operating Minima - General

(See Appendix 1 to OPS 3.430)

(a) The pilot-in-command shall establish operating minima in accordance with criteria specified by the State of Registry for each heliport or landing location to be used in operations. When establishing aerodrome operating minima, any conditions that may be prescribed in the list of specific approvals shall be observed. Such minima shall not be lower than any that may be established by the State of the Aerodrome, except when specifically approved by that State.

(b) Notwithstanding paragraph (a) above, in-flight calculation of minima for use at unplanned alternate heliports and/or for approaches utilising EVS shall be carried out in accordance with a method acceptable to the Authority.

Note: The above paragraph does not prohibit in-flight calculation of minima for a non-planned alternate heliport if carried out in accordance with an accepted method.

(c) The Authority shall authorise operational credit(s) for operations with advanced aircraft. Where the operational credit relates to low visibility operations, the Authority, as the State of the Operator, shall issue a specific approval. Such authorizations shall not affect the classification of the instrument approach procedure.

Note: Operational credit includes:

(1) for the purposes of an approach ban under OPS 3.405, or dispatch considerations, a minimum below the heliport or landing location operating minima;

(2) reducing or satisfying the visibility requirements; or

(3) requiring fewer ground facilities as compensated for by airborne capabilities.

(d) When issuing a specific approval for the operational credit, the Authority, as the State of the Operator, shall ensure that;

(1) the helicopter meets the appropriate airworthiness certification requirements;

(2) the information necessary to support effective crew tasks for the operation is appropriately available to both pilots where the number of flight crew members specified in the operations manual is more than one;

(3) the operator has carried out a safety risk assessment of the operations supported by the equipment;

(4) the operator has established and documented normal and abnormal procedures and MEL;

(5) the operator has established a training programme for the flight crew members and relevant personnel involved in the flight preparation;

(6) the operator has established a system for data collection, evaluation and trend monitoring for low visibility operations for which there is an operational credit; and

(7) the operator has instituted appropriate procedures in respect of continuing airworthiness (maintenance and repair) practices and programmes.

(e) For operations with operational credit with minima above those related to low visibility operations described in Subpart E, the Authority, as the State of the Operator shall establish criteria for the safe operation of the helicopter.

(f) Instrument approach operations shall be classified based on the designed lowest operating minima below which an approach operation shall only be continued with the required visual reference as follows;

(1) Type A: a minimum descent height or decision height at or above 75 m (250 ft); and

(2) Type B: a decision height below 75 m (250 ft). Type B instrument approach operations are categorized as:

(i) Category I (CAT I): a decision height not lower than 60 m (200 ft) and with either a visibility not less than 800 m or a runway visual range not less than 550 m;

(ii) Category II (CAT II): a decision height lower than 60 m (200 ft), but not lower than 30 m (100 ft) and a runway visual range not less than 300 m;

(iii) Category III: a decision height lower than 100 ft (30 m) or no decision height and a runway visual range less than 300 m or no runway visual range limitation. These are;

(A) Category IIIA (CAT IIIA): a decision height lower than 30 m (100 ft) or no decision height and a runway visual range not less than 175 m;

(B) Category IIIB (CAT IIIB): a decision height lower than 15 m (50 ft), or no decision height and a runway visual range less than 175 m but not less than 50 m; and

(C) Category IIIC (CAT IIIC): no decision height and no runway visual range limitations.

Note 1: Where decision height (DH) and runway visual range (RVR) fall into different categories of operation, the instrument approach operation would be conducted in accordance with the requirements of the most demanding category (e.g. an operation with a DH in the range of CAT IIIA but with an RVR in the range of CAT IIIB would be considered a CAT IIIB operation or an operation with a DH in the range of CAT II but with an RVR in the range of CAT I would be considered a CAT II operation).This does not apply if the RVR and/or DH has been approved as operational credit.

Note 2: The required visual reference means that section of the visual aids or of the approach area which should have been in view for sufficient time for the pilot to have made an assessment of the helicopter position and rate of change of position, in relation to the desired flight path. In the case of a circling approach operation the required visual reference is the runway environment.

(g) The operating minima for 2D instrument approach operations using instrument approach procedures shall be determined by establishing a minimum descent altitude (MDA) or minimum descent height (MDH), minimum visibility and, if necessary, cloud conditions.

(h) The operating minima for 3D instrument approach operations using instrument approach procedures shall be determined by establishing a decision altitude (DA) or decision height (DH) and the minimum visibility or RVR.

(i) The Authority shall issue a specific approval for instrument approach operations in low visibility which shall only be conducted when RVR information is provided.

(j) For take-off in low visibility, the Authority shall issue a specific approval for the minimum take-off RVR.

OPS 3.435 Terminology

(a) Terms used in this Subpart have the following meaning:

(1) *Circling*. The visual phase of an instrument approach to bring an aircraft into position for landing which is not suitably located for a straight-in approach.

(2) *Low Visibility Procedures (LVP)*. Procedures applied at a heliport for the purpose of ensuring safe operations during Category II and III approaches and Low Visibility Take-offs.

(3) *Low Visibility Take-Off (LVTO)*. A take-off where the Runway Visual Range (RVR) is less than 400 m.

(4) *Final Approach and Take-Off area (FATO)*. A defined area over which the final phase of the approach manoeuvre to hover or landing is completed and from which the take-off manoeuvre is commenced and, where the FATO is to be used by helicopters operated in Performance Class 1, includes the rejected take-off area available.

(5) *Visual Approach.* An approach by an IFR flight when either part or all of an instrument approach procedure is not completed and the approach is executed with visual reference to the terrain.

(6) *Cloud base.* The height of the base of the lowest observed, or forecast, cloud element in the vicinity of an aerodrome, or heliport, or within a specified area of operations. The height of the cloud base is normally measured above aerodrome elevation, but in the case of offshore operations cloud base in measured above mean sea level.

OPS 3.440 Low Visibility Operations - General Operating Rules
(See Appendix 1 to OPS 3.440)

(a) The Authority, as State of the Operator, shall issue a specific approval for instrument approach operations in low visibility, which shall only be conducted when RVR information is provided.

(b) The operator shall not conduct Category II or III operations unless:

(1) Each helicopter concerned is certificated for operations with decision heights below 200 ft, or no decision height, and equipped in accordance with CS-AWO or an equivalent accepted by the Authority;

(2) A suitable system for recording approach and/or automatic landing success and failure is established and maintained to monitor the overall safety of the operation;

(3) The operations are approved by the Authority;

(4) The flight crew consists of at least 2 pilots;

(5) Decision Height is determined by means of a radio altimeter; and

(6) RVR information is provided

(c) For take-off in low visibility, the Authority, as State of the Operator, shall issue a specific approval for the minimum take-off RVR.

OPS 3.445 Low Visibility Operations - Heliport Considerations

(a) The operator shall not use a heliport for Category II or III operations unless the heliport is approved for such operations by the State in which the heliport is located.

(b) The operator shall verify that Low Visibility Procedures (LVP) have been established, and will be enforced, at those heliports where low visibility operations are to be conducted.

OPS 3.450 Low Visibility Operations - Training and Qualifications
(See Appendix 1 to OPS 3.450)

(a) The operator shall ensure that, prior to conducting Low Visibility Take-Off, Category II and III operations:

(1) Each flight crew member:

(i) Completes the training and checking requirements prescribed in Appendix 1 including flight simulator training in operating to the limiting values of RVR and Decision Height appropriate to the operator's Category II/III approval; and

(ii) Is qualified in accordance with Appendix 1;

(2) The training and checking is conducted in accordance with a detailed syllabus approved by the Authority and included in the Operations Manual. This training is in addition to that prescribed in OPS 3, Subpart N; and

(3) The flight crew qualification is specific to the operation and the helicopter type.

OPS 3.455 Low Visibility Operations - Operating Procedures (LVPs)
(See Appendix 1 to OPS 3.455)

(a) The operator must establish procedures and instructions to be used for Low Visibility Take-Off and Category II and III operations. These procedures must be included in the Operations Manual and contain the duties of flight crew members during taxiing, take-off, approach, flare, the hover, landing, roll-out and missed approach as appropriate.

(b) The commander shall satisfy himself that:

(1) The status of the visual and non-visual facilities is sufficient prior to commencing a Low Visibility Take-Off or a Category II or III approach;

(2) Appropriate LVPs are in force according to information received from Air Traffic Services, before commencing a Low Visibility Take-Off or a Category II or III approach; and

(3) The flight crew members are properly qualified prior to commencing a Low Visibility Take-off in an RVR of less than 150 m or a Category II or III approach.

OPS 3.460 Low Visibility Operations - Minimum Equipment

(a) The operator must include in the Operations Manual the minimum equipment that has to be serviceable at the commencement of a Low Visibility Take-off or a Category II or III approach in accordance with the HFM or other approved document.

(b) The commander shall satisfy himself that the status of the helicopter and of the relevant airborne systems is appropriate for the specific operation to be conducted.

OPS 3.465 VFR Operating Minima
(See Appendices 1 and 2 to OPS 3.465)

(a) The operator shall ensure that:

(1) VFR flights are conducted in accordance with the Visual Flight Rules and in accordance with the Table in Appendix 1 to OPS 3.465;

(2) Subject to sub-paragraph (3) and (4) below, helicopters are operated in a flight visibility of not less than 1500 m during daylight and not less than 5 km by night. Flight visibility may be reduced to 800 m for short periods during daylight, when in sight of land, if the helicopter is manoeuvred at a speed that will give adequate opportunity to observe other traffic and any obstacles in time to avoid a collision (see AC OPS 3.465.). Low level overwater flights out of sight of land are only to be conducted under VFR when the cloud ceiling is greater than 600 ft by day and 1 200 ft by night.

(3) In Class G airspace, when flying between helidecks where the overwater sector is less than 10 nm, VFR flights are conducted in accordance with Appendix 2 to OPS 3.465; and

(4) Special VFR flights comply with any State or Zone minima in force.

Appendix 1 to OPS 3.430

Heliport or Landing Location Operating Minima
(See AMC Appendix 1 to OPS 3.430)

(a) *Take-off Minima*

(1) *General*

(i) Take-off minima established by the operator must be expressed as visibility or RVR limits, taking into account all relevant factors for each heliport planned to be used and the helicopter characteristics. Where there is a specific need to see and avoid obstacles on departure and/or for a forced landing, additional conditions (e.g. ceiling) must be specified.

(ii) The commander shall not commence take-off unless the weather conditions at the heliport of departure are equal to or better than applicable minima for landing at that heliport unless a suitable take-off alternate heliport is available.

(iii) When the reported meteorological visibility is below that required for take-off and RVR is not reported, a take-off may only be commenced if the commander can determine that the RVR/Visibility along the take-off FATO/runway is equal to or better than the required minimum.

(iv) When no reported meteorological visibility or RVR is available, a take-off may only be commenced if the commander can determine that the RVR/Visibility along the take-off FATO/runway is equal to or better than the required minimum.

(2) *Visual reference*.

(i) The take-off minima must be selected to ensure sufficient guidance to control the helicopter in the event of both a discontinued take-off in adverse circumstances and a continued take-off after failure of the critical power unit.

(ii) For night operations ground lighting must be available to illuminate the FATO/runway and any obstacles unless otherwise agreed by the Authority.

(3) *Required RVR/Visibility*

(i) For Performance Class 1 operations, the operator must establish an RVR and visibility respectively (RVR/VIS) as take-off minima in accordance with the following table (See AMC Appendix 1 to OPS 3.430(a)(3)(i)).

Table 1 - RVR/Visibility for Take-off

Onshore heliports with IFR departure procedures	**RVR/Visibility**
No lighting and no markings (Day)	250 m or the rejected take-off distance, whichever is greater
No markings (Night)	800 m
Runway edge/FATO lighting and centre line marking	200 m
Runway edge/FATO lighting, centre line marking and RVR information	150 m
Offshore Helideck	
Two pilot operations	250 m
Single pilot operations	500 m

Note: The commander must establish that the take-off flight path is free of obstacles.

(i) For Performance Class 2 operations onshore, the commander must operate to take-off minima of 800 m RVR/VIS and remain clear of cloud during the take-off manoeuvre until reaching Performance Class 1 capabilities.

(ii) For Performance Class 2 operations offshore, the commander must operate to minima not less than that for Class 1 and remain clear of cloud during the take-off manoeuvre until reaching Performance Class 1 capabilities.

(iii) Table 6 below, for converting reported meteorological visibility to RVR, must not be used for calculating take-off minima.

(b) *Non-Precision approach*

(1) *System minima*

(i) The operator must ensure that system minima for non-precision approach procedures, which are based upon the use of ILS without glidepath (LLZ only), VOR, NDB, SRA and VDF are not lower than the MDH values given in Table 2 below.

Table 2 – System Minima for Non-precision Approach Aids

System minima	
Facility	**Lowest DH (MDH)**
ILS/MLS/GLS	200 ft
GNSS/SBAS (LPV)	200 ft
GNSS (LNAV)	250 ft
GNSS/Baro-VNAV (LNAV/VNAV)	250 ft
Localizer with or without DME	250 ft
SRA (terminating at ½ NM)	250 ft
SRA (terminating at 1 NM)	300 ft
SRA (terminating at 2 NM or more)	350 ft
VOR	300 ft
VOR/DME	250 ft
NDB	350 ft
NDB/DME	300 ft
VDF	350 ft

Note: The following abbreviations apply to Table 3.

DME: distance measuring equipment;
GNSS: global navigation satellite system;
ILS: instrument landing system;
LNAV: lateral navigation;
LOC: localiser;
LPV: localiser performance with vertical guidance
SBAS: satellite-based augmentation system;
SRA: surveillance radar approach;
VDF: VHF direction finder;
VNAV: vertical navigation;
VOR: VHF omnidirectional radio range.

(2) *Minimum Descent Height*. The operator must ensure that the minimum descent height for a non-precision approach is not lower than either:

(i) The OCH/OCL for the category of helicopter; or

(ii) The system minimum.

(3) *Visual Reference*. A pilot may not continue an approach below MDA/MDH unless at least one of the following visual references for the intended FATO/runway is distinctly visible and identifiable to the pilot:

(i) Elements of the approach light system;

(ii) The threshold;

(iii) The threshold markings;

(iv) The threshold lights;

(v) The threshold identification lights;

(vi) The visual glide slope indicator;

(vii) The touchdown zone or touchdown zone markings;

(viii) The touchdown zone lights;

(ix) FATO/Runway edge lights; or

(x) Other visual references accepted by the Authority.

(4) *Required RVR*. (See AMC to Appendix 1 to OPS 3.430(b)(4).)

(i) For non-precision approaches by helicopters operated in Performance Class 1 or 2, the minima given in the following Table shall apply:

Table 3 – Onshore Non-precision Approach Minima

Onshore Non-Precision Approach Minima (5)(6)(7)				
MDH (ft)	**Facilities/RVR**			
	Full (1)	**Intermediate** (2)	**Basic** (3)	**Nil** (4)
250-299 ft	600 m	800 m	1 000 m	1 000 m
300-449 ft	800 m	1 000 m	1 000 m	1 000 m
450 ft and above	1 000 m	1 000 m	1 000 m	1 000 m

Note 1: Full facilities comprise FATO/runway markings, 720 m or more of HI/MI approach lights, FATO/runway edge lights, threshold lights and FATO/runway end lights. Lights must be on.

Note 2: Intermediate facilities comprise FATO/runway markings, 420 - 719 m of HI/MI approach lights, FATO/runway edge lights, threshold lights and FATO/runway end lights. Lights must be on.

Note 3: Basic facilities comprise FATO/runway markings, <420 m HI/MI approach lights, any length of LI approach lights, FATO/runway edge lights, threshold lights and FATO/runway end lights. Lights must be on.

Note 4: Nil approach light facilities comprise FATO/runway markings, FATO/runway edge lights, threshold lights, FATO/runway end lights or no lights at all.

Note 5: The tables are only applicable to conventional approaches with a nominal descent slope of not greater than 4°. Greater descent slopes will usually require that visual glide slope guidance (e.g. PAPI) is also visible at the Minimum Descent Height.

Note 6: The above figures are either reported RVR or meteorological visibility converted to RVR as in sub-paragraph (h) below.

Note 7: The MDH mentioned in Table 3 refers to the initial calculation of MDH. When selecting the associated RVR, there is no need to take account of a rounding up to the nearest ten feet, which may be done for operational purposes, e.g. conversion to MDA.

(ii) Where the missed approach point is within ½ nm of the landing threshold, the approach minima given for full facilities may be used regardless of the length of approach lighting available. However, FATO/runway edge lights, threshold lights, end lights and FATO/runway markings are still required.

(iii) *Night operations*. For night operations ground lighting must be available to illuminate the FATO/runway and any obstacles unless otherwise agreed by the Authority.

(iv) *Single pilot operations*. For single pilot operations the minimum RVR is 800 m or the Table 3 minima whichever is higher.

(c) *Precision approach - Category I operations*

(1) *General*. A Category I operation is a precision instrument approach and landing using ILS, MLS or PAR with a decision height not lower than 200 ft and with a runway visual range not less than 500 m.

(2) *Decision Height*. The operator must ensure that the decision height to be used for a Category I precision approach is not lower than:

(i) The minimum decision height specified in the Helicopter Flight Manual (HFM) if stated;

(ii) The minimum height to which the precision approach aid can be used without the required visual reference;

(iii) The OCH/OCL for the category of helicopter; or

(iv) 200 ft.

(3) *Visual Reference*. A pilot may not continue an approach below the Category I decision height, determined in accordance with sub-paragraph (c)(2) above, unless at least one of the following visual references for the intended runway is distinctly visible and identifiable to the pilot:

(i) Elements of the approach light system;

(ii) The threshold;

(iii) The threshold markings;

(iv) The threshold lights;

(v) The threshold identification lights;

(vi) The visual glide slope indicator;

(vii) The touchdown zone or touchdown zone markings;

(viii) The touchdown zone lights; or

(ix) FATO/runway edge lights.

(4) *Required RVR*. For Category I operations by Performance Class 1 and 2 helicopters the following minima shall apply:

Table 4 - Onshore Precision Approach Minima - Category I

Onshore Precision Approach Minima Category I (5)(6)(7)				
DH (ft)	**Facilities/RVR**			
	Full (1)	**Intermediate** (2)	**Basic** (3)	**Nil** (4)
200 ft	500 m	600 m	700 m	1 000 m
201-250 ft	550 m	650 m	750 m	1 000 m
251-300 ft	600 m	700 m	800 m	1 000 m
301 ft & above	750 m	800 m	900 m	1 000 m

Note 1: Full facilities comprise FATO/runway markings, 720 m or more of HI/MI approach lights, FATO/runway edge lights, threshold lights and FATO/runway end lights. Lights must be on.

Note 2: Intermediate facilities comprise FATO/runway markings, 420 - 719 m of HI/MI approach lights, FATO/runway edge lights, threshold lights and FATO/runway end lights. Lights must be on.

Note 3: Basic facilities comprise FATO/runway markings, <420 m of HI/MI approach lights, any length of LI approach lights, FATO/runway edge lights, threshold lights and FATO/runway end lights. Lights must be on.

Note 4: Nil approach light facilities comprise FATO/runway markings, FATO/runway edge lights, threshold lights, FATO/runway end lights or no lights at all.

Note 5: The above figures are either the reported RVR or meteorological visibility converted to RVR in accordance with paragraph (h).

Note 6: The Table is applicable to conventional approaches with a glide slope angle up to and including 4°.

Note 7: The DH mentioned in the Table 4 refers to the initial calculation of DH. When selecting the associated RVR, there is no need to take account of a rounding up to the nearest ten feet, which may be done for operational purposes, (e.g. conversion to DA).

(i) *Night operations*. For night operations ground lighting must be available to illuminate the FATO/runway and any obstacles unless otherwise agreed by the Authority.

(ii) *Single pilot operations*. For single pilot operations, the operator must calculate the minimum RVR for all approaches in accordance with OPS 3.430 and this Appendix. An RVR of less than 800 m is not permitted except when using a suitable autopilot

coupled to an ILS or MLS, in which case normal minima apply. The Decision Height applied must not be less than 1·25 x the minimum use height for the autopilot.

(d) *Onshore precision approach - Category II operations* (See AMC OPS 3.430(d))

(1) *General*. A Category II operation is a precision instrument approach and landing using ILS or MLS with:

(i) A decision height below 200 ft but not lower than 100 ft; and

(ii) A runway visual range of not less than 300 m.

(2) *Decision Height*. The operator must ensure that the decision height for a Category II operation is not lower than:

(i) The minimum decision height specified in the HFM;

(ii) The minimum height to which the precision approach aid can be used without the required visual reference;

(iii) The OCH/OCL for the category of helicopter;

(iv) The decision height to which the flight crew is authorised to operate; or

(v) 100 ft.

(3) *Visual reference*. A pilot may not continue an approach below the Category II decision height determined in accordance with sub-paragraph (d)(2) above unless visual reference containing a segment of at least 3 consecutive lights being the centre line of the approach lights, or touchdown zone lights, or FATO/runway centre line lights, or FATO/runway edge lights, or a combination of these is attained and can be maintained. This visual reference must include a lateral element of the ground pattern, i.e. an approach lighting crossbar or the landing threshold or a barette of the touchdown zone lighting.

(4) *Required RVR*. For Category II approaches by performance class 1 helicopters the following minima shall apply:

Table 5 - RVR for Category II Approach vs. DH

Onshore Precision Approach Minima – Category II	
Decision height	**Auto-coupled to below DH (1) RVR**
100 - 120 ft	300 m
121 - 140 ft	400 m
141 ft and above	450 m

Note: The reference to 'auto-coupled to below DH' in this table means continued use of the automatic flight control system down to a height which is not greater than 80% of the applicable DH. Thus airworthiness requirements may, through minimum engagement height for the automatic flight control system, affect the DH to be applied.

(e) *Intentionally blank*

(f) *Onshore circling*

(1) Circling is the term used to describe the visual phase of an instrument approach, to bring an aircraft into position for landing on a FATO/runway which is not suitably located for a straight in approach.

(2) For circling the specified MDH shall not be less than 250 ft, and the meteorological visibility shall not be less than 800 m.

Note: Visual manoeuvring (circling) with prescribed tracks is an accepted procedure within the meaning of this paragraph.

(g) *Visual Approach*. The operator shall not use an RVR of less than 800 m for a visual approach.

(h) *Conversion of Reported Meteorological Visibility to RVR*

(1) The operator must ensure that a meteorological visibility to RVR conversion is not used for calculating take-off minima, Category II or III minima or when a reported RVR is available.

(2) When converting meteorological visibility to RVR in all other circumstances than those in sub-paragraph (h)(1) above, the operator must ensure that the following Table is used:

Table 6 - Conversion of Visibility to RVR

Lighting elements in operation	**RVR = Met visibility multiplied by:**	
	Day	Night
Hi approach and runway lighting	1·5	2·0
Any type of lighting	1·0	1·5
No lighting	1·0	Not applicable

(i) *Airborne Radar Approach (ARA) for overwater operations* (See AMC Appendix 1 to OPS 3.430(i)).

(1) *General*

(i) The operator shall not conduct ARAs unless authorised by the Authority.

(ii) Airborne Radar Approaches are only permitted to rigs or vessels under way when a multi-crew concept is used.

(iii) A commander shall not undertake an Airborne Radar Approach unless the radar can provide course guidance to ensure obstacle clearance.

(iv) Before commencing the final approach the commander shall ensure that a clear path exists on the radar screen for the final and missed approach segments. If lateral clearance from any obstacle will be less than 1.0 nm, the commander shall:

(A) Approach to a nearby target structure and thereafter proceed visually to the destination structure; or

(B) Make the approach from another direction leading to a circling manoeuvre.

(v) The Commander shall ensure that the cloud ceiling is sufficiently clear above the helideck to permit a safe landing.

(2) *Minimum Descent Height (MDH)*. Notwithstanding the minima at sub-paragraphs (i) and (ii) below, the MDH shall not be less than 50 ft above the elevation of the helideck.

(i) The MDH is determined from a radio altimeter. The MDH for an airborne radar approach shall not be lower than:

(A) 200 ft by day;

(B) 300 ft by night.

(ii) The MDH for an approach leading to a circling manoeuvre shall not be lower than:

(A) 300 ft by day;

(B) 500 ft by night.

(3) *Minimum descent altitude (MDA)*. An MDA may only be used if the radio altimeter is unserviceable. The MDA shall be a minimum of MDH +200 ft and shall be based on a calibrated barometer at the destination or on the lowest forecast QNH for the region.

(4) *Decision range*. The Decision Range shall not be less than 0·75 nm unless the operator has demonstrated to the Authority that a lesser Decision Range can be used at an acceptable level of safety.

(5) *Visual reference*. No pilot may continue an approach beyond Decision Range or below MDH/MDA unless he is visual with the destination.

(6) *Single pilot operations*. The MDH/MDA for a single pilot ARA shall be 100 ft higher than that calculated using sub-paragraphs (2) and (3) above. The Decision Range shall not be less than 1·0 nm.

Appendix 1 to OPS 3.440

Low Visibility Operations - General Operating Rules

(a) *General*. The following procedures apply to the introduction and approval of low visibility operations.

(b) *Airborne Systems Operational Demonstration*. The operator must comply with the requirements prescribed in sub-paragraph (c) below when introducing a helicopter type which is new to the Authority into Category II or III service.

Note: For helicopter types already used for Category II or III operations in another State, the in-service proving programme in paragraph (f) applies instead.

(1) *Operational reliability*. The Category II and III success rate must not be less than that required by CS-AWO.

(2) *Criteria for a successful approach*. An approach is regarded as successful if:

(i) The criteria are as specified in CS- AWO or its equivalent;

(ii) No relevant helicopter system failure occurs.

(c) *Data Collection during Airborne System Demonstration*. General

(1) The operator must establish a reporting system to enable checks and periodic reviews to be made during the operational evaluation period before the operator is authorised to conduct Category II or III operations. The reporting system must cover all successful and unsuccessful approaches, with reasons for the latter, and include a record of system component failures. This reporting system must be based upon flight crew reports and automatic recordings as prescribed in paragraphs (d) and (e) below.

(2) The recordings of approaches may be made during normal line flights or during other flights performed by the operator.

(d) *Data Collection during Airborne System Demonstration - Operations with DH not less than 50 ft.*

(1) For operations with DH not less than 50 ft, data must be recorded and evaluated by the operator and evaluated by the Authority when necessary.

(2) It is sufficient for the following data to be recorded by the flight crew:

(i) Heliport and runway used;

(ii) Weather conditions;

(iii) Time;

(iv) Reason for failure leading to an aborted approach;

(v) Adequacy of speed control;

(vi) Trim at time of automatic flight control system disengagement;

(vii) Compatibility of automatic flight control system, flight director and raw data;

(viii) An indication of the position of the helicopter relative to the ILS centreline when descending through 30 m (100 ft); and

(ix) Touchdown position.

(3) The number of approaches, as approved by the Authority, made during the initial evaluation must be sufficient to demonstrate that the performance of the system in actual airline service is such that a 90% confidence and a 95% approach success will result.

(e) *Data Collection during Airborne System Demonstration - Operations with DH less than 50 ft or no DH*

(1) For operations with DH less than 50 ft or no DH, a flight data recorder, or other equipment giving the appropriate information, must be used in addition to the flight crew reports to confirm that the system performs as designed in actual airline service. The following data is required:

(i) Distribution of ILS deviations at 30 m (100 ft), at touchdown and, if appropriate, at disconnection of the roll-out control system and the maximum values of the deviations between those points; and

(ii) Sink rate at touchdown.

(2) Any landing irregularity must be fully investigated using all available data to determine its cause.

(f) *In-service proving*

Note: The operator fulfilling the requirements of sub-paragraph (b) above will be deemed to have satisfied the in-service proving requirements contained in this paragraph.

(1) The system must demonstrate reliability and performance in line operations consistent with the operational concepts. A sufficient number of successful landings, as determined by the Authority, must be accomplished in line operations, including training flights, using the autoland and roll-out system installed in each helicopter type.

(2) The demonstration must be accomplished using a Category II or Category III ILS. However, if the operator chooses to do so, demonstrations may be made on other ILS facilities if sufficient data is recorded to determine the cause of unsatisfactory performance.

(3) If the operator has different variants of the same type of helicopter utilising the same basic flight control and display systems, or different basic flight control and display systems on the same type of helicopter, the operator shall show that the variants comply with the basic system performance criteria, but the operator need not conduct a full operational demonstration for each variant.

(4) Where the operator introduces a helicopter type which has already been approved by the Authority of any State for Category II and/or III operations a reduced proving programme may be approved.

(g) *Continuous Monitoring*

(1) After obtaining the initial authorisation, the operations must be continuously monitored by the operator to detect any undesirable trends before they become hazardous. Flight crew reports may be used to achieve this.

(2) The following information must be retained for a period of 12 months:

(i) The total number of approaches, by helicopter type, where the airborne Category II or III equipment was utilised to make satisfactory, actual or practice, approaches to the applicable Category II or III minima; and

(ii) Reports of unsatisfactory approaches and/or automatic landings, by heliport and helicopter registration, in the following categories:

(A) Airborne equipment faults;

(B) Ground facility difficulties;

(C) Missed approaches because of ATC instructions; or

(D) Other reasons.

(3) The operator must establish a procedure to monitor the performance of the automatic landing system of each helicopter.

(h) *Transitional periods*

(1) *Operators with no previous Category II or III experience*

(i) The operator without previous Category II or III operational experience may be approved for Category II or IIIA operations, having gained a minimum experience of 6 months of Category I operations on the helicopter type.

(ii) On completing 6 months of Category II or IIIA operations on the helicopter type the operator may be approved for Category IIIB operations. When granting such an approval, the Authority may impose higher minima than the lowest applicable for an additional period. The increase in minima will normally only refer to RVR and/or a restriction against operations with no decision height and must be selected such that they will not require any change of the operational procedures.

(2) *Operators with previous Category II or III experience*. The operator with previous Category II or III experience may obtain authorisation for a reduced transition period by application to the Authority.

(i) *Maintenance of Category II, Category III and LVTO equipment*. Maintenance instructions for the on-board guidance systems must be established by the operator, in liaison with the manufacturer, and included in the operator's helicopter maintenance programme prescribed in OPS 3.910 which must be approved by the Authority.

Appendix 1 to OPS 3.450

Low Visibility Operations - Training & Qualifications

(a) *General*. The operator must ensure that flight crew member training programmes for Low Visibility Operations include structured courses of ground, flight simulator and/or flight training. The operator may abbreviate the course content as prescribed by sub-paragraphs (2) and (3) below provided the content of the abbreviated course is acceptable to the authority.

(1) Flight crew members with no Category II or Category III experience must complete the full training programme prescribed in sub-paragraphs (b), (c) and (d) below.

(2) Flight crew members with Category II or Category III experience with another acceptable operator may undertake an abbreviated ground training course.

(3) Flight crew members with Category II or Category III experience with the operator may undertake an abbreviated ground, flight simulator and/or flight training course. The abbreviated course is to include at least the requirements of sub-paragraphs (d)(1), (d)(2)(i) or (d)(2)(ii) as appropriate and (d)(3)(i).

(b) *Ground Training*. The operator must ensure that the initial ground training course for Low Visibility Operations covers at least:

(1) The characteristics and limitations of the ILS and/or MLS;

(2) The characteristics of the visual aids;

(3) The characteristics of fog;

(4) The operational capabilities and limitations of the particular airborne system;

(5) The effects of precipitation, ice accretion, low level wind shear and turbulence;

(6) The effect of specific helicopter malfunctions;

(7) The use and limitations of RVR assessment systems;

(8) The principles of obstacle clearance requirements;

(9) Recognition of and action to be taken in the event of failure of ground equipment;

(10) The procedures and precautions to be followed with regard to surface movement during operations when the RVR is 400 m or less and any additional procedures required for take-off in conditions below 150 m;

(11) The significance of decision heights based upon radio altimeters and the effect of terrain profile in the approach area on radio altimeter readings and on the automatic approach/landing systems;

(12) The importance and significance of Alert Height if applicable and the action in the event of any failure above and below the Alert Height;

(13) The qualification requirements for pilots to obtain and retain approval to conduct Low Visibility Take-offs and Category II or III operations; and

(14) The importance of correct seating and eye position.

(c) *Flight Simulator training and/or flight training*

(1) The operator must ensure that flight simulator and/or flight training for Low Visibility Operations includes:

(i) Checks of satisfactory functioning of equipment, both on the ground and in flight;

(ii) Effect on minima caused by changes in the status of ground installations;

(iii) Monitoring of automatic flight control systems and autoland status annunciators with emphasis on the action to be taken in the event of failures of such systems;

(iv) Actions to be taken in the event of failures such as engines, electrical systems, hydraulics or flight control systems;

(v) The effect of known unserviceabilities and use of minimum equipment lists;

(vi) Operating limitations resulting from airworthiness certification;

(vii) Guidance on the visual cues required at decision height together with information on maximum deviation allowed from glidepath or localiser; and

(viii) The importance and significance of Alert Height if applicable and the action in the event of any failure above and below the Alert Height.

(2) The operator must ensure that each flight crew member is trained to carry out his duties and instructed on the coordination required with other crew members. Maximum use should be made of suitably equipped flight simulators for this purpose.

(3) Training must be divided into phases covering normal operation with no helicopter or equipment failures but including all weather conditions which may be encountered and detailed scenarios of helicopter and equipment failure which could affect Category II or III operations. If the helicopter system involves the use of hybrid or other special systems (such as head up displays or enhanced vision equipment) then flight crew members must practise the use of these systems in normal and abnormal modes during the flight simulator phase of training.

(4) Incapacitation procedures appropriate to Low Visibility Take-offs and Category II and III operations shall be practised.

(5) For helicopters with no type specific flight simulator, operators must ensure that the flight training phase specific to the visual scenarios of Category II operations is conducted in a flight simulator approved for that purpose by the Authority. Such training must include a minimum of 4 approaches. The training and procedures that are type specific shall be practised in the helicopter.

(6) Category II and III training shall include at least the following exercises:

(i) Approach using the appropriate flight guidance, autopilots and control systems installed in the helicopter, to the appropriate decision height and to include transition to visual flight and landing;

(ii) Approach with all engines operating using the appropriate flight guidance systems, autopilots and control systems installed in the helicopter down to the appropriate decision height followed by missed approach; all without external visual reference;

(iii) Where appropriate, approaches utilising automatic flight systems to provide automatic flare, hover, landing and roll-out; and

(iv) Normal operation of the applicable system both with and without acquisition of visual cues at decision height.

(7) Subsequent phases of training must include at least:

(i) Approaches with engine failure at various stages on the approach;

(ii) Approaches with critical equipment failures (e.g. electrical systems, autoflight systems, ground and/or airborne ILS/MLS systems and status monitors);

(iii) Approaches where failures of autoflight equipment at low level require either;

(A) Reversion to manual flight to control flare, hover, landing and roll out or missed approach; or

(B) Reversion to manual flight or a downgraded automatic mode to control missed approaches from, at or below decision height including those which may result in a touchdown on the runway;

(iv) Failures of the systems which will result in excessive localiser and/or glideslope deviation, both above and below decision height, in the minimum visual conditions authorised for the operation. In addition, a continuation to a manual landing must be practised if a head-up display forms a downgraded mode of the automatic system or the head-up display forms the only flare mode; and

(v) Failures and procedures specific to helicopter type or variant.

(8) The training programme must provide practice in handling faults which require a reversion to higher minima.

(9) The training programme must include the handling of the helicopter when, during a fail passive Category III approach, the fault causes the autopilot to disconnect at or below decision height when the last reported RVR is 300 m or less.

(10) Where take-offs are conducted in RVRs of 400 m and below, training must be established to cover systems failures and engine failure resulting in continued as well as rejected take-offs.

(d) *Conversion Training Requirements to conduct Low Visibility Take-off and Category II and III Operations*. The operator shall ensure that each flight crew member completes the following Low Visibility Procedures training if converting to a new type or variant of helicopter in which Low Visibility Take-off and Category II and III Operations will be conducted. The flight crew member experience requirements to undertake an abbreviated course are prescribed in sub-paragraphs (a)(2) and (a)(3), above;

(1) *Ground Training*. The appropriate requirements prescribed in sub-paragraph (b) above, taking into account the flight crew member's Category II and Category III training and experience.

(2) *Simulator Training and/or Flight training.*

(i) A minimum of 8 approaches and/or landings in a flight simulator approved for the purpose.

(ii) Where no type-specific flight simulator is available, a minimum of 3 approaches including at least 1 go-around is required on the helicopter.

(iii) Appropriate additional training if any special equipment is required such as head-up displays or enhanced vision equipment.

(3) *Flight Crew Qualification*. The flight crew qualification requirements are specific to the operator and the type of helicopter operated.

(i) The operator must ensure that each flight crew member completes a check before conducting Category II or III operations.

(ii) The check prescribed in sub-paragraph (i) above may be replaced by successful completion of the flight simulator and/or flight training prescribed in sub-paragraph (d)(2) above.

(4) *Line Flying under Supervision*. The operator must ensure that each flight crew member undergoes the following line flying under supervision:

(i) For Category II when a manual landing is required, a minimum of 3 landings from autopilot disconnect;

(ii) For Category III, a minimum of 3 autolands except that only 1 autoland is required when the training required in sub-paragraph (d)(2) above has been carried out in a full flight simulator usable for zero flight time training.

(e) *Type and command experience*. The following additional requirements are applicable to pilots-in-command who are new to the helicopter type:

(1) 50 hours or 20 sectors as pilot-in-command on the type before performing any Category II or Category III operation; and

(2) 100 hours or 40 sectors as pilot-in-command on the type. 100 m must be added to the applicable Category II or Category III RVR minima unless he has been previously qualified for Category II or III operations with an acceptable operator.

(3) The Authority may authorise a reduction in the above command experience requirements for flight crew members who have Category II or Category III command experience.

(f) *Low Visibility Take-Off with RVR less than 150 m*

(1) The operator must ensure that prior to authorisation to conduct take-offs in RVRs below 150 m the following training is carried out:

(i) Normal take-off in minimum authorised RVR conditions;

(ii) Take-off in minimum authorised RVR conditions with an engine failure at or after TDP; and

(iii) Take-off in minimum authorised RVR conditions with an engine failure before the TDP.

(2) The operator must ensure that the training required by sub-paragraph (1) above is carried out in an approved flight simulator. This training must include the use of any special procedures and equipment. Where no approved flight simulator exists, the Authority may approve such training in a helicopter without the requirement for minimum RVR conditions. (See Appendix 1 to OPS 3.965.)

(3) The operator must ensure that a flight crew member has completed a check before conducting low visibility take-offs in RVRs of less than 150 m if applicable. The check may only be replaced by successful completion of the flight simulator and/or flight training prescribed in sub-paragraph (f)(1) on initial conversion to a helicopter type.

(g) *Recurrent Training and Checking - Low Visibility Operations*

(1) The operator must ensure that, in conjunction with the normal recurrent training and operator proficiency checks, a pilot's knowledge and ability to perform the tasks associated with the particular category of operation, including LVTO, for which he is authorised is checked. The required number of approaches to be conducted during such recurrent training is to be a minimum of two, one of which is to be a missed approach and at least one low visibility take off to the lowest applicable minima. The period of validity for this check is 6 months including the remainder of the month of issue.

(2) For Category III operations the operator must use a flight simulator approved for Category III training.

(3) The operator must ensure that, for Category III operations on helicopters with a fail passive flight control system, a missed approach is completed at least once every 18 months as the result of an autopilot failure at or below decision height when the last reported RVR was 300 m or less.

(4) The Authority may authorise recurrent training for Category II operations in a helicopter type where no approved flight simulator is available.

(h) *LVTO and Category II/III Recency Requirements*

(1) The operator must ensure that, in order for pilots to maintain a Category II and Category III qualification, they have conducted a minimum of 3 approaches and landings using approved Category II/III procedures during the previous six month period, at least one of which must be conducted in the helicopter.

(2) Recency for LVTO is maintained by retaining the Category II or III qualification prescribed in sub-paragraph (h)(1) above.

(3) The operator may not substitute this recency requirement for recurrent training.

Appendix 1 to OPS 3.455

Low Visibility Operations - Operating procedures

(a) *General*. Low Visibility Operations include:

(1) Manual take-off (with or without electronic guidance systems);

(2) Auto-coupled approach to below DH, with manual flare, hover, landing and roll-out;

(3) Auto-coupled approach followed by auto-flare, hover, autolanding and manual roll-out; and

(4) Auto-coupled approach followed by auto-flare, hover, autolanding and auto-roll-out, when the applicable RVR is less than 400 m.

Note 1: A hybrid system may be used with any of these modes of operations.

Note 2: Other forms of guidance systems or displays may be certificated and approved.

(b) *Procedures and Operating Instructions*

(1) The precise nature and scope of procedures and instructions given depend upon the airborne equipment used and the flight deck procedures followed. The operator must clearly define flight crew member duties during take-off, approach, flare, hover, roll-out and missed approach in the Operations Manual. Particular emphasis must be placed on flight crew responsibilities during transition from non-visual conditions to visual conditions, and on the procedures to be used in deteriorating visibility or when failures occur. Special attention must be paid to the distribution of flight deck duties so as to ensure that the workload of the pilot making the decision to land or execute a missed approach enables him to devote himself to supervision and the decision making process.

(2) The operator must specify the detailed operating procedures and instructions in the Operations Manual. The instructions must be compatible with the limitations and mandatory procedures contained in the Helicopter Flight Manual and cover the following items in particular:

(i) Checks for the satisfactory functioning of the helicopter equipment, both before departure and in flight;

(ii) Effect on minima caused by changes in the status of the ground installations and airborne equipment;

(iii) Procedures for the take-off, approach, flare, hover, landing, roll-out and missed approach;

(iv) Procedures to be followed in the event of failures, warnings and other non-normal situations;

(v) The minimum visual reference required;

(vi) The importance of correct seating and eye position;

(vii) Action which may be necessary arising from a deterioration of the visual reference;

(viii) Allocation of crew duties in the carrying out of the procedures according to sub-paragraphs (i) to (iv) and (vi) above, to allow the Commander to devote himself mainly to supervision and decision making;

(ix) The requirement for all height calls below 200 ft to be based on the radio altimeter and for one pilot to continue to monitor the helicopter instruments until the landing is completed;

(x) The requirement for the Localiser Sensitive Area to be protected;

(xi) The use of information relating to wind velocity, windshear, turbulence, runway contamination and use of multiple RVR assessments;

(xii) Procedures to be used for practice approaches and landing on runways at which the full Category II or Category III heliport procedures are not in force;

(xiii) Operating limitations resulting from airworthiness certification; and

(xiv) Information on the maximum deviation allowed from the ILS glide path and/or localiser.

Appendix 1 to OPS 3.465

Minimum Visibilities for VFR Operations

Airspace class	**A B C D E** (Note 1)	**F G**
	Above 900 m (3 000 ft) AMSL or above 300 m (1 000 ft) above terrain, whichever is the higher	At and below 900 m (3 000 ft) AMSL or 300 m (1 000 ft) above terrain, whichever is the higher
Distance from cloud	1 500 m horizontally 300 m (1 000 ft) vertically	Clear of cloud and in sight of the surface
Flight visibility	5 km (Note 3)	

Note 1: *VMC Minima for Class A airspace are included for guidance but do not imply acceptance of VFR flights in Class A airspace.*

Note 2: *When the height of the transition altitude is lower than 3 050 m (10000 ft) AMSL, FL 100 should be used in lieu of 10000ft.*

Note 3: *Helicopters may be operated in flight visibility down to 1 500 m by day, provided the appropriate ATS authority permits use of a flight visibility less than 5 km, and the circumstances are such, that the probability of encounters with other traffic is low, and the IAS is 140 kts or less. When so prescribed by the appropriate ATS Authority, helicopters may be permitted to operate down to a flight visibility of 800 m by day.*

Appendix 2 to OPS 3.465

Minima for Flying Between Helidecks Located in Class G Airspace

	Day		Night	
	Height (Note 1)	**Visibility**	**Height** (Note 1)	**Visibility**
Single Pilot	300 ft	3 km	500 ft	5 km
Two Pilots	300 ft	(Note 2)	500 ft	5 km (Note 3)

Note 1: *The cloud base shall be such as to allow flight at the specified height below and clear of cloud*

Note 2: *Helicopters may be operated in flight visibility down to 800 m provided the destination, or an intermediate structure, is continuously visible.*

Note 3: *Helicopters may be operated in flight visibility down to 1 500 m provided the destination or an intermediate structure are continuously visible.*

SUBPART F

PERFORMANCE GENERAL

OPS 3.470 Applicability

(a) Helicopters shall be operated in accordance with the following comprehensive and detailed code of performance of the applicable Subpart F, G, H or I.

Note: The code of performance reflects, for the conduct of operations, both the various phases of flight and the operational environment.

(b) The level of performance defined by the appropriate Subparts referred to in (a) above shall be consistent with the overall level embodied in ICAO Annex 6, Part III, Chapter 3 Standards.

(c) The operator shall ensure that;

(1) helicopters operating to/from heliports located in a congested hostile environment: or

(2) helicopters which have a maximum approved passenger seating configuration (MAPSC) of more than 19;

are operated in accordance with OPS 3, Subpart G (Performance Class 1); except helicopters:

(i) with a maximum approved passenger seating configuration (MAPSC) of more than 19 and operated to/from helidecks; which may be operated in accordance with OPS 3.517(a); or

(ii) which have an operational approval in accordance with Appendix 1 to OPS 3.005(i) (b)

(d) Unless otherwise prescribed by sub-paragraph (c) above, the operator shall ensure that helicopters which have a maximum approved passenger seating configuration of 19 or less but more than 9 are operated in accordance with OPS 3, Subpart G or H (Performance Class 1 or 2);

(e) Unless otherwise prescribed by sub-paragraph (c) above, the operator shall ensure that helicopters which have a maximum approved passenger seating configuration of 9 or less, are operated in accordance with OPS 3, Subpart G, H or I (Performance Class 1, 2 or 3).

(f) Where full compliance with the requirements of the appropriate Subpart cannot be shown due to specific design characteristics, the operator shall apply to the Authority for approved performance standards that ensure a level of safety equivalent to that of the appropriate Subpart.

(g) A flight shall not be commenced unless the performance information provided in the flight manual indicates that the requirements of the Subpart G, H or I, as applicable, can be complied with for the flight to be undertaken.

OPS 3.475 General

(a) The operator shall ensure that the mass of the helicopter:

(1) At the start of the take-off;

or, in the event of in-flight replanning;

(2) At the point from which the revised operational flight plan applies,

is not greater than the mass at which the requirements of the appropriate Subpart can be complied with for the flight to be undertaken, allowing for expected reductions in mass as the flight proceeds, and for such fuel jettisoning as is provided for in the particular requirement.

(b) The operator shall ensure that the approved performance data contained in the Helicopter Flight Manual is used to determine compliance with the requirements of the appropriate Subpart, supplemented as necessary with other data acceptable to the Authority as prescribed in the relevant Subpart. When applying the factors prescribed in the appropriate Subpart, account may be taken of any operational factors already incorporated in the Helicopter Flight Manual performance data to avoid double application of factors.

(c) When showing compliance with the requirements of the appropriate Subpart, due account shall be taken of the following parameters:

(1) mass of the helicopter;

(2) helicopter configuration;

(3) environmental conditions, in particular:

(i) pressure-altitude, and temperature;

(ii) wind:

(A) for take-off, take-off flight path and landing requirements, accountability for wind shall be no more than 50% of any reported steady head wind component of 5 knots or more.

(B) Where take-off and landing with a tail wind component is permitted in the Helicopter Flight Manual, and in all cases for the take-off flight path, not less than 150% of any reported tail wind component shall be taken into account.

(C) Where precise wind measuring equipment enables accurate measurement of wind velocity over the point of take-off and landing, alternate wind components specific to a site may be approved by the Authority. (See AC OPS 3.475(c)(3)(ii));

(4) operating techniques;

(5) noise certification standards; and

(6) operation of any system which have adverse effect on performance.

(d) The Authority, as the State of Registry, shall take such precautions as are reasonably possible to ensure that the general level of safety contemplated by these provisions is maintained under all expected operating conditions, including those not covered specifically by the provisions of Subparts G, H and I.

(e) Placards, listings, instrument markings, or combinations thereof, containing those operating limitations prescribed for visual presentation, shall be displayed in the helicopter.

(f) In conditions where the safe continuation of flight is not ensured in the event of a critical engine failure, helicopter operations shall be conducted in conditions of weather and light, and over such routes and diversions that permit a safe forced landing to be executed.

(g) Notwithstanding paragraph (f), the Authority as the State of the Operator may, based on the result of a risk assessment, allow for variations without a safe forced landing to be included in this Code of Performance. The risk assessment shall take into consideration at least the following;

(1) the type and circumstances of the operation;

(2) the area/terrain over which the operation is being conducted;

(3) the probability of, and length of exposure to, a critical engine failure and the tolerability of such an event;

(4) the procedures and systems for monitoring and maintaining the reliability of the engine(s);

(5) the training and operational procedures to mitigate the consequences of the critical engine failure; and

(6) helicopter equipment.

Note: Guidance on conduct of the risk assessment to allow for variations to the need for a safe forced landing, including mitigation strategies to reduce the risk, is contained in ICAO Doc 10110.

OPS 3.477 Obstacle Accountability
(See AC to Subpart H)

(a) The operator shall use available obstacle data to develop procedures to comply with the take-off, initial climb, approach and landing phases detailed in the performance requirements of the applicable Subparts F, G, H or I.

(b) For the purpose of obstacle clearance requirements, an obstacle, located beyond the FATO, in the take-off flight path or the missed approach flight path, shall be considered if its lateral distance from the nearest point on the surface below the intended flight path is not further than:

(1) For VFR operations:

(i) half of the minimum FATO (or the equivalent term used in the Flight Manual) width defined in the Helicopter Flight Manual (or, when no width is defined 0.75 D), plus 0.25 times D (or 3 m, whichever is greater), plus:

- 0.10 DR for VFR day operations

- 0.15 DR for VFR night operations

(2) For IFR operations:

(i) 1.5 D (or 30 m, whichever is greater), plus:

- 0.10 DR for IFR operations with accurate course guidance
- 0.15 DR for IFR operations with standard course guidance
- 0.30 DR for IFR operations without course guidance

(ii) when considering the missed approach flight path, the divergence of the obstacle accountability area only applies after the end of the take-off distance available;

(iii) standard course guidance includes ADF and VOR guidance. Accurate course guidance include ILS, MLS or other course guidance providing an equivalent navigational accuracy.

(3) For operations with initial take-off conducted visually and converted to IFR/IMC at a transition point, the criteria required in (1) apply up to the transition point then the criteria required in (2) apply after the transition point:

(i) the transition point cannot be located before the end of TODRH for helicopters operating in performance Class 1 and before the DPATO for helicopters operating in performance Class 2;

(b) For take-off using a backup (or a lateral transition) procedure; for the purpose of obstacle clearance requirements, an obstacle, located in the back-up (or lateral transition) area, shall be considered if its lateral distance from the nearest point on the surface below the intended flight path is not further than:

(1) half of the minimum FATO (or the equivalent term used in the Flight Manual) width defined in the Helicopter Flight Manual (or, when no width is defined 0.75 D), plus 0.25 times D (or 3 m, whichever is greater), plus 0.10 for VFR day, or 0.15 for VFR night, of the distance travelled from the back of the FATO. (see AC OPS 3.490(d))

(c) Obstacles may be disregarded if they are situated beyond:

(1) 7 R for day operations if it is assured that navigational accuracy can be achieved by reference to suitable visual cues during the climb;

(2) 10 R for night operations if it is assured that navigational accuracy can be achieved by reference to suitable visual cues during the climb;

(3) 300 m if navigational accuracy can be achieved by appropriate navigation aids; and

(4) 900 m in the other cases.

OPS 3.480 Terminology

(a) Terms used in Subparts F, G, H and I have the following meaning:

(1) *'Category A'* with respect to helicopters means multi-engine helicopters designed with engine and system isolation features specified in CS-27/29 or equivalent acceptable to the Authority and Helicopter Flight Manual performance information based on a critical engine failure concept which assures adequate designated surface area and adequate performance capability for continued safe flight in the event of an engine failure.

(2) *'Category B'* with respect to helicopters means single-engine or multi-engine helicopters which do not fully meet all Category A standards. Category B helicopters have no guaranteed stay-up ability in the event of engine failure and unscheduled landing is assumed.

(3) *Committal Point* (CP). The committal point is defined as the point in the approach at which the pilot flying (PF) decides that, in the event of a power unit failure being recognised, the safest option is to continue to the deck.

(4) *Congested area*. In relation to a city, town or settlement, any area which is substantially used for residential, commercial or recreational purposes (See also definitions of hostile and non-hostile environment).

(5) *D*. The largest dimension of the helicopter when the rotors are turning.

(6) *Defined point after take-off (DPATO).* The point, within the take-off and initial climb phase, before which the helicopter's ability to continue the flight safely, with the critical power unit inoperative, is not assured and a forced landing may be required.

(7) *Defined point before landing (DPBL)*. The point within the approach and landing phase, after which the helicopter's ability to continue the flight safely, with the critical power unit inoperative, is not assured and a forced landing may be required.

Note: Defined points apply to helicopters operated in Performance Class 2 only.

(8) *Distance DR*. DR is the horizontal distance that the helicopter has travelled from the end of the take-off distance available.

(9) *Elevated heliport*. A heliport which is at least 3 m above the surrounding surface.

(10) *Exposure time.* The actual period during which the performance of the helicopter with the critical power unit inoperative in still air does not guarantee a safe forced landing or the safe continuation of the flight. (See also definition of maximum permitted exposure time).

(11) *Helideck.* A heliport located on a floating or fixed off-shore structure.

(12) *Heliport*. An aerodrome or a defined area of land, water or a structure used or intended to be used wholly or in part for the arrival, departure and surface movement of helicopters.

(13) *Hostile environment*:

(i) An environment in which:

(A) A safe forced landing cannot be accomplished because the surface is inadequate; or

(B) The helicopter occupants cannot be adequately protected from the elements; or

(C) Search and rescue response/capability is not provided consistent with anticipated exposure; or

(D) There is an unacceptable risk of endangering persons or property on the ground;

(ii) In any case, the following areas shall be considered hostile:

(A) For overwater operations, the open sea areas designated by the Authority of the State concerned; and

(B) Those parts of a congested area without adequate safe forced landing areas.

(See AMC OPS 3.480(a)(12))

(14) *Landing decision point (LDP)*. The point used in determining landing performance from which, a power unit failure having been recognised at this point, the landing may be safely continued or a baulked landing initiated.

(15) *Landing distance available.* The length of the final approach and take-off area plus any additional area declared available and suitable for helicopters to complete the landing manoeuvre from a defined height.

(16) *Landing distance required.* The horizontal distance required to land and come to a full stop from a point 10·7 m (35 ft) above the landing surface.

(17) *Maximum approved passenger seating configuration*. The maximum passenger seating capacity of an individual helicopter, excluding crew seats, used by the operator, approved by the Authority and included in the Operations Manual.

(18) *Maximum permitted exposure time.* A period, determined on the basis of the power unit failure rate recorded for the helicopter's engine type, during which the probability of a power unit failure can be discounted. (See also definition of exposure time).

(19) *Non-hostile environment*.

(i) An environment in which:

(A) A safe forced landing can be accomplished; and

(B) The helicopter occupants can be protected from the elements; and

(C) Search and rescue response/capability is provided consistent with the anticipated exposure;

(ii) In any case, those parts of a congested area with adequate safe forced landing areas shall be considered non-hostile.

(20) *Obstacle*. Obstacles include the surface of the earth, whether land or sea.

(21) *Performance Class 1*. Performance Class 1 operations are those with performance such that, in the event of failure of the critical power unit, the helicopter is able to land within the rejected take-off distance available or safely continue the flight to an appropriate landing area, depending on when the failure occur.

(22) *Performance Class 2*. Performance Class 2 operations are those operations such that, in the event of critical power unit failure, performance is available to enable the helicopter to safely continue the flight, except when the failure occurs early during the take-off manoeuvre or late in the landing manoeuvre, in which cases a forced landing may be required.

(23) *Performance Class 3*. Performance Class 3 operations are those operations such that, in the event of a power unit failure at any time during the flight, a forced landing may be required in a multi-engined helicopter but will be required in a single engine helicopter.

(24) *Rejected take-off distance available (RTODAH).* The length of the final approach and take-off area declared available and suitable for helicopters operated in Performance Class 1 to complete a rejected take-off.

(25) *Rejected take-off distance required (RDODRH)*. The horizontal distance required from the start of the take-off to the point where the helicopter comes to a full stop following a power unit failure and rejection of the take-off at the take-off decision point.

(26) *Reported headwind component.* Reported headwind component is interpreted as being that reported at the time of flight planning and may be used provided there is no significant change of unfactored wind prior to take-off.

(27) *Rotation Point* (RP). The rotation point is defined as the point at which a cyclic input is made to initiate a nose-down attitude change during the take-off flight path. It is the last point in the take-off path from which, in the event of an engine failure being recognised, a forced landing on the deck can be achieved.

(28) *R*. Rotor radius.

(29) *Safe forced landing*. Unavoidable landing or ditching with a reasonable expectancy of no injuries to persons in the aircraft or on the surface.

(30) *Take-off decision point (TDP)*. The point used in determining take-off performance from which, a power unit failure having been recognised at this point, either a rejected take-off may be made or a take-off safely continued.

(31) *Take-off distance available (TODAH)*. The length of the final approach and take-off area plus the length of helicopter clearway (if provided) declared available and suitable for helicopters to complete the take-off.

(32) *Take-off distance required (TODRH).* The horizontal distance required from the start of the take-off to the point at which VTOSS, a selected height and a positive climb gradient are achieved, following failure of the critical power unit being recognised at TDP, the remaining power units within approved operating limits. The selected height is to be determined with the use of Helicopter Flight Manual data, and is to be at least 10.7 m (35 ft) above:

(i) the take-off surface; or

(ii) as an alternative, a level defined by the highest obstacle in the take-off distance required.

(33) *Take-off flight path.* The vertical and horizontal path, with the critical power unit inoperative, from a specified point in the take-off to 1000 ft above the surface.

(34) *Take-off mass*. The take-off mass of the helicopter shall be taken to be its mass, including everything and everyone carried at the commencement of the take-off.

(35) *Touchdown and lift-off area (TLOF)*. A load bearing area on which a helicopter may touchdown or lift off.

(36) *Vy*. Best rate of climb speed.

(b) The terms 'take-off distance required', 'take-off flight path', 'critical power unit inoperative en-route flight path' all have their meanings defined in the airworthiness requirements under which the helicopter was certificated, or as specified by the Authority if it finds the data provided in the Helicopter Flight Manual inadequate for showing compliance with the performance operating limitations.

SUBPART G

PERFORMANCE CLASS 1

OPS 3.485 General

The operator shall ensure that helicopters operated in Performance Class 1 are certificated in Category A. (See AC OPS 3.480(a)(1) and (a)(2))

OPS 3.490 Take-off

(a) The operator shall ensure that:

(1) The take-off mass does not exceed the maximum take-off mass specified in the Helicopter Flight Manual for the procedure to be used (see AC OPS 3.490 & 3.510).

(2) The take-off mass is such that:

(i) it is possible to reject the take-off and land on the FATO in case of the critical power-unit failure being recognized at or before the TDP;

(ii) The rejected take-off distance required does not exceed the rejected take-off distance available; and

(iii) The take-off distance required does not exceed the take-off distance available

(iv) As an alternative, the requirement in OPS 3.490(a)(2)(iii) above may be disregarded provided that the helicopter, with the critical power unit failure recognised at TDP can, when continuing the take-off, clear all obstacles to the end of the take-off distance required by a vertical margin of not less than 10.7 m (35 ft) (see AC OPS 3.480(a)(31));

(b) When showing compliance with subparagraph (a) above, account shall be taken of the appropriate parameters of OPS 3.475(c) at the heliport of departure:

(c) The part of the take-off up to and including TDP shall be conducted in sight of the surface such that a rejected take-off can be carried out.

(d) For take-off using a backup (lateral transition) procedure, the operator shall ensure that, with the critical power-unit inoperative, all obstacles in the back-up (lateral transition) area are cleared by an adequate margin. (see AC OPS 3.490(d))

OPS 3.495 Take-off Flight Path

(a) The operator shall ensure that, from the end of the take-off distance required with the critical power unit failure recognised at the TDP:

(1) The take-off mass is such that the take-off flight path provides a vertical clearance of not less than 10.7 m (35 ft) for VFR operations and 10.7 m (35 ft) + 0.01 DR for IFR operations above all obstacles located in the climb path. Only obstacles as specified in OPS 3.477 have to be considered.

(2) Where a change of direction of more than 15° is made, adequate allowance is made for the effect of bank angle on the ability to comply with the obstacle clearance requirements. This turn is not to be initiated before reaching a height of 61 m (200 ft) above the take-off surface unless permitted as part of an approved procedure in the Flight Manual.

(b) When showing compliance with subparagraph (a) above, account shall be taken of the appropriate parameters of OPS 3.475(c) at the heliport of departure.

OPS 3.500 En-route - Critical Power Unit Inoperative

(a) The operator shall ensure that the en-route flight path with the critical power unit inoperative, appropriate to the meteorological conditions expected for the flight complies with either subparagraph (1), (2) or (3) below at all points along the route.

(1) When it is intended that the flight will be conducted at any time out of sight of the surface, the mass of the helicopter permits a rate of climb of at least 50 ft/minute with the critical power unit inoperative at an altitude of at least 300 m (1000 ft) 600 m (2000 ft) in areas of mountainous terrain, above all terrain and obstacles along the route within 9.3 km (5 nm) on either side of the intended track.

(2) When it is intended that the flight will be conducted without the surface in sight, the flight path permits the helicopter to continue flight from the cruising altitude to a height of 300 m (1000 ft) above a landing site where a landing can be made in accordance with OPS 3.510. The flight path clears vertically, by at least 300 m (1000 ft), 600 m (2000 ft) in areas of mountainous terrain, all terrain and obstacles along the route within 9.3 km (5 nm) on either side of the intended track. Drift-down techniques may be used.

(3) When it is intended that the flight will be conducted in VMC with the surface in sight, the flight path permits the helicopter to continue flight from the cruising altitude to a height of 300 m (1000 ft) above a landing site where a landing can be made in accordance with OPS 3.510, without flying at any time below the appropriate minimum flight altitude, obstacles within 900 m on either side of the route need to be considered.

(b) When showing compliance with paragraph (a)(2) or (a)(3) above, the operator shall ensure that:

(1) The critical power unit is assumed to fail at the most critical point along the route.

(2) Account is taken of the effects of winds on the flight path.

(3) Fuel jettisoning is planned to take place only to an extent consistent with reaching the heliport with the required fuel reserves and using a safe procedure (See AC OPS 3.500(b)(3)).

(4) Fuel jettisoning is not planned below 1000 ft above terrain.

(c) The width margins of subparagraphs (a)(1) and (a)(2) above shall be increased to 18.5 km (10 nm) if the navigational accuracy cannot be met for 95% of the total flying time (see OPS 3.240, 3.243 and 3.250.

OPS 3.510 Landing

(a) The operator shall ensure that:

(1) The landing mass of the helicopter at the estimated time of landing does not exceed the maximum mass specified in the Helicopter Flight Manual for the procedure to be used (see AC OPS 3.490 & 3.510).

(2) in the event of the critical power unit failure being recognised at any point at or before the LDP, it is possible either to land and stop within the FATO, or to perform a balked landing and clear all obstacles in the flight path by a vertical margin of 10.7 m (35 ft) (see AC OPS 3.480(a)(32)). Only obstacles as specified in OPS 3.477 have to be considered;

(3) in the event of the critical power-unit failure being recognised at any point at or after the LDP, it is possible to clear all obstacles in the approach path; and

(4) in the event of the critical power-unit failure being recognised at any point at or after the LDP, it is possible to land and stop within the FATO.

(b) When showing compliance with subparagraph (a) above, account shall be taken of the appropriate parameters of OPS 3.475(c) for the estimated time of landing at the destination heliport, or any alternate if required.

(c) That part of the landing from the LDP to touchdown shall be conducted in sight of the surface.

SUBPART H

PERFORMANCE CLASS 2

OPS 3.515 General

The operator shall ensure that helicopters operated in Performance Class 2 are certificated in Category A. (See AC to OPS 480(a)(1) and (a)(2).

OPS 3.517 Operations Without an Assured Safe Forced Landing Capability

(See Appendix 1 to OPS 3.517(a)

The operator shall be satisfied that operations without an assured safe forced landing capability during the take-off and landing phases are not conducted unless the operator has been granted the relevant approval by the Authority in accordance with Appendix 1 to OPS 3.517(a). (See also OPS 3.470(a)(1).)

OPS 3.520 Take-off

(See AMC OPS 3.520)
(See AMC OPS 3.520 & 3.535)

(a) The operator shall be satisfied that:

(1) the take-off mass does not exceed the maximum mass specified for a rate of climb of 150 ft/min at 300 m (1 000 ft) above the level of the heliport with the critical power unit inoperative and the remaining power units operating at an appropriate power rating.

(2) for operations other than specified in OPS 3.517(a), the take-off is conducted such that a safe forced landing can be executed until the point where safe continuation of the flight is possible (see AC to Subpart H paragraph 6.2).

(3) for operations in accordance with OPS 3.517(a) in addition to the requirements of (a)(1) above:

(i) the take-off mass does not exceed the maximum mass specified in the Helicopter Flight Manual for an AEO OGE hover in still air with all power units operating at an appropriate power rating.

(ii) for operations to/from a helideck;

(A) with a helicopter that has a maximum approved passenger seating configuration (MAPSC) of more than 19; and

(B) any helicopter operated to/from a helideck located in a non-congested hostile environment as defined in OPS 3.480(13)(ii)(A);

the take-off mass takes into account: the procedure; deck-edge miss; and drop down appropriate to the height of the helideck – with the critical power unit(s) inoperative and the remaining power units operating at an appropriate power rating.

(b) When showing compliance with subparagraph (a) above, account shall be taken of the appropriate parameters of OPS 3.475(c) at the heliport of departure.

(c) The part of the take-off before the requirement of OPS 3.525 is met shall be conducted in sight of the surface.

OPS 3.525 Take-off Flight Path

The operator shall be satisfied that from DPATO or, as an alternative, no later than 200 ft above the take-off surface, with the critical power unit inoperative the requirements of OPS 3.495(a)(1), (2) and (b) are met.

OPS 3.530 En-route - Critical power unit inoperative

The operator shall ensure that the requirement of OPS 3.500 is met.

OPS 3.535 Landing
(See AC to Subpart H)
(See AMC OPS 3.520 & 3.535)

(a) The operator shall be satisfied that:

(1) The landing mass at the estimated time of landing does not exceed the maximum mass specified for a rate of climb of 150 ft/min at 300 m (1000 ft) above the level of the heliport with the critical power unit inoperative and the remaining power units operating at an appropriate power rating.

(2) If the critical power unit fails at any point in the approach path:

(i) a balked landing can be carried out meeting the requirement of OPS 3.525; or

(ii) for operations other than specified in OPS 3.517(a) the helicopter can perform a safe-forced landing.

(3) For operations in accordance with OPS 3.517(a) in addition to the requirements of (a)(1) above:

(i) The landing mass does not exceed the maximum mass specified in the Helicopter Flight Manual for an OGE hover in still air with all power units operating at an appropriate power rating.

(ii) For operations to/from a helideck;

(A) with a helicopter that has a maximum approved passenger seating configuration (MAPSC) of more than 19; and

(B) any helicopters operated to/from a helideck located in a non-congested hostile environment as defined in OPS 3.480(13)(ii)(A);

the landing mass takes into account the procedure, and drop down appropriate to the height of the helideck - with the critical power unit inoperative and the remaining power unit(s) operating at an appropriate power rating.

(b) When showing compliance with subparagraph (a) above, account shall be taken of the appropriate parameters of OPS 3.475(c) at the destination heliport or any alternate, if required.

(c) The part of the landing after which the requirement of OPS 3.525 cannot be met shall be conducted in sight of the surface.

Appendix 1 to OPS 3.517(a)

Helicopter Operations Without an Assured Safe Forced Landing Capability
(See OPS 3.517(a))
(See AC-1 to Appendix 1 to OPS 3.517(a))
(See AC-2 to Appendix 1 to OPS 3.517(a))

(a) Approval:

(1) Following a risk assessment, the operator may be authorised to conduct operations without an assured safe forced landing capability during the take-off and landing phases, under an approval specifying:

(i) The type of helicopter; and

(ii) The type of operations.

(2) Such an approval will be subject to the following conditions:

(i) A set of conditions to be implemented by the operator to obtain and maintain the approval for the helicopter type;

(ii) Implementation of a Usage Monitoring System

SUBPART I

PERFORMANCE CLASS 3

OPS 3.540 General

(a) The operator shall ensure that:

(1) Helicopters operated in Performance Class 3 are certificated in either Category A or B (see also AC OPS 3.480(a)(1) and (a)(2)).

(2) Operations are only conducted from/to those heliports and over such routes, areas and diversions contained in a non-hostile environment, except for the take-off and landing phase as provided in (b) below.

(b) The operator may conduct operations to/ from a heliport located outside a congested hostile environment, without an assured safe forced landing capability during the take-off and landing phases (see AC OPS 3.540(b)):

(1) during take-off; before reaching Vy or 200 ft above the take-off surface; or

(2) during landing; below 200 ft above the landing surface;

provided the operator has been granted a relevant approval by the Authority in accordance with Appendix 1 to OPS 3.517(a).

(c) Unless the helicopter meets the requirements of OPS 3.541, the operator shall ensure that operations are not conducted:

(1) in IMC;

(2) out of sight of the surface;

(3) at night;

(4) when the ceiling is less than 600 ft; or

(5) when the visibility is less than 800 m.

OPS 3.541 Operations of Helicopters In Performance Class 3 In IMC

(See AMC OPS 3.541)
(See AC OPS 3.541)

(a) Operations in performance Class 3 in IMC shall be conducted only over a surface environment acceptable to the competent authority of the State over which the operations are performed.

(b) In approving operations by helicopters operating in performance Class 3 in IMC, the Authority, as the State of the Operator, shall ensure that the helicopter is certificated for flight under IFR and that the overall level of safety is provided by:

(1) the reliability of the engines;

(2) the operator’s maintenance procedures, operating practices and crew training programmes; and

(3) equipment and other requirements provided in accordance with AMC OPS 3.541.

(c) Operators of helicopters operating in performance Class 3 in IMC shall have a programme for engine trend monitoring and shall utilise the engine and helicopter manufacturers' recommended instruments, systems and operational/ maintenance procedures to monitor the engines.

(d) In order to minimize the occurrence of mechanical failures, helicopters operating in IMC in performance Class 3 should utilize vibration health monitoring for the tail-rotor drive system.

OPS 3.545 Take-off

The operator shall ensure that:

(a) The take-off mass does not exceed the maximum take-off mass specified for a hover in ground effect with all power units operating at take-off power. If conditions are such that a hover in ground effect is not likely to be established, the take-off mass shall not exceed the maximum take-off mass specified for a hover out of ground effect with all power units operating at take-off power.

(b) in the event of a power unit failure, the helicopter is able to perform a safe forced landing, except when operated in accordance with the alleviation contained in sub-paragraph 3.540(b).

OPS 3.550 En-route

The operator shall ensure that:

(a) The helicopter is able, with all power units operating within the maximum continuous power conditions specified, to continue along its intended route or to a planned diversion without flying at any point below the appropriate minimum flight altitude; and

(b) in the event of a power unit failure, the helicopter is able to perform a safe forced landing.

OPS 3.555 Landing

The operator shall ensure that:

(a) The landing mass of the helicopter at the estimated time of landing does not exceed the maximum landing mass specified for a hover in ground effect, with all power units operating at take-off power. If conditions are such that a hover in ground effect is not likely to be established, the landing mass shall not exceed the maximum landing mass specified for a hover out of ground effect with all power units operating at take-off power.

(b) in the event of a power unit failure, the helicopter is able to perform a safe forced landing, except when operated in accordance with the alleviation contained in sub-paragraph 3.540(b).

SUBPART J

MASS AND BALANCE

OPS 3.605 General

(See Appendix 1 to OPS 3.605)

(a) The operator shall ensure that during any phase of operation, the loading, mass and centre of gravity of the helicopter complies with the limitations specified in the approved Helicopter Flight Manual, or the Operations Manual if more restrictive.

(b) The operator must establish the mass and the centre of gravity of any helicopter by actual weighing prior to initial entry into service and thereafter at intervals of 5 years. The accumulated effects of modifications and repairs on the mass and balance must be accounted for and properly documented. Furthermore, helicopters must be reweighed if the effect of modifications on the mass and balance is not accurately known.

(c) The operator must determine the mass of all operating items and crew members included in the helicopter dry operating mass by weighing or by using standard masses. The influence of their position on the helicopter centre of gravity must be determined.

(d) The operator must establish the mass of the traffic load, including any ballast, by actual weighing or determine the mass of the traffic load in accordance with standard passenger and baggage masses as specified in OPS 3.620.

(e) The operator must determine the mass of the fuel load by using the actual density or, if not known, the density calculated in accordance with a method specified in the Operations Manual. (See AMC OPS 3.605(e).)

OPS 3.607 Terminology

(a) *Dry Operating Mass*. The total mass of the helicopter ready for a specific type of operation excluding all usable fuel and traffic load.

(b) *Maximum Take-Off Mass*. The maximum permissible total helicopter mass at take-off.

(c) *Traffic Load*. The total mass of passengers, baggage and cargo, including any non-revenue load.

(d) *Passenger classification.*

(1) Adults, male and female, are defined as persons of an age of 12 years and above.

(2) Children are defined as persons of an age of two years and above but who are less than 12 years of age.

(3) Infants are defined as persons who are less than 2 years of age.

OPS 3.610 Loading, Mass and Balance

The operator shall specify, in the Operations Manual, the principles and methods involved in the loading and in the mass and balance system that meet the requirements of OPS 3.605. This system must cover all types of intended operations.

OPS 3.615 Mass Values for Crew

(a) The operator shall use the following mass values to determine the dry operating mass:

(1) Actual masses including any crew baggage; or

(2) Standard masses, including hand baggage, of 85 kg for crew members and; or

(3) Other standard masses acceptable to the Authority.

(b) The operator must correct the dry operating mass to account for any additional baggage. The position of this additional baggage must be accounted for when establishing the centre of gravity of the helicopter.

OPS 3.620 Mass Values for Passengers and Baggage

(a) The operator shall compute the mass of passengers and checked baggage using either the actual weighed mass of each person and the actual weighed mass of baggage or the standard mass values specified in Tables 1 to 3 below except where the number of passenger seats available is less than 6. In the case of such exceptions, passenger mass may be established by use of a verbal statement by, or on behalf of, each passenger and adding to it a pre-determined constant to account for hand baggage and clothing (See AMC OPS 3.620(a)). The procedure specifying when to select actual or standard masses and the procedure to be followed when using verbal statements must be included in the Operations Manual.

(b) If determining the actual mass by weighing, the operator must ensure that passengers' personal belongings and hand baggage are included. Such weighing must be conducted immediately prior to boarding and at an adjacent location.

(c) If determining the mass of passengers using standard mass values, the standard mass values in Tables 1, 2 and 3 below which include the mass of any infant below 2 years of age carried by an adult on one passenger seat, must be used. Infants occupying separate passenger seats must be considered as children for the purpose of this sub-paragraph.

(d) Where the total number of passenger seats available on a helicopter is 20 or more, the standard masses of male and female in Table 1 are applicable. As an alternative, in cases where the total number of passenger seats available is 30 or more, the 'All Adult' mass values in Table 1 are applicable.

Table 1

Passenger seats:	**20 and more**		**30 and more**
	Male	**Female**	**All adult**
All flights	82 kg	64 kg	78 kg
Children	35 kg	35 kg	35 kg
Hand baggage (where applicable)	6 kg		
Survival suit (where applicable)	3 kg		

(e) Where the total number of passenger seats available on a helicopter is 10 - 19 inclusive the standard masses in Table 2 are applicable.

Table 2

Passenger seats:	**10-19**	
	Male	**Female**
All flights	86 kg	68 kg
Children	35 kg	35 kg
Hand baggage (where applicable)	6 kg	
Survival suit (where applicable)	3 kg	

(f) Where the number of passenger seats available is 1 - 5 inclusive or 6 - 9 inclusive, the standard masses in Table 3 are applicable.

Table 3

Passenger seats:	**1–5**	**6–9**
Male	98 kg	90 kg
Female	80 kg	72 kg
Children	35 kg	35 kg
Hand baggage (where applicable)	6 kg	
Survival suit (where applicable)	3 kg	

(g) Where the total number of passenger seats available on the helicopter is 20 or more the standard mass value for each piece of checked baggage is 13 kg. For helicopters with 19 passenger seats or less the actual mass of checked baggage, determined by weighing, must be used.

(h) If the operator wishes to use standard mass values other than those contained in Tables 1 to 3 above, he must advise the Authority of his reasons and gain its approval in advance. He must also submit for approval a detailed weighing survey plan and apply the statistical analysis method given in Appendix 1 to OPS 3.620(h). After verification and approval by the Authority of the results of the weighing survey, the revised standard mass values are only applicable to that operator. The revised standard mass values can only be used in circumstances consistent with those under which the survey was conducted.

(i) Where revised standard masses exceed those in Tables 13, then such higher values must be used.

(j) On any flight identified as carrying a significant number of passengers whose masses, including hand baggage, are expected to exceed the standard passenger mass, the operator must determine the actual mass of such passengers by weighing or by adding an adequate mass increment. (See AMC OPS 3.620(i) & (j))

(k) If standard mass values for checked baggage are used and a significant number of passengers check in baggage that is expected to exceed the standard baggage mass, the operator must determine the actual mass of such baggage by weighing or by adding an adequate mass increment. (See AMC OPS 3.620(i) & (j))

(l) The operator shall ensure that a commander is advised when a non-standard method has been used for determining the mass of the load and that this method is stated in the mass and balance documentation.

OPS 3.625 Mass and Balance Documentation

(See Appendix 1 to OPS 3.625)

(a) The operator shall establish mass and balance documentation prior to each flight specifying the load and its distribution. The mass and balance documentation must enable the commander to determine that the load and its distribution is such that the mass and balance limits of the helicopter are not exceeded. The person preparing the mass and balance documentation must be named on the document. The person supervising the loading of the helicopter must confirm by signature that the load and its distribution are in accordance with the mass and balance documentation. This document must be acceptable to the commander, his acceptance being indicated by countersignature or equivalent. (See also OPS 3.1055(a)(12).)

(b) The operator must specify procedures for Last Minute Changes to the load.

(c) Subject to the approval of the Authority, the operator may use an alternative to the procedures required by paragraphs (a) and (b) above.

Appendix 1 to OPS 3.605

Mass and Balance - General
(See OPS 3.605)

(a) *Determination of the dry operating mass of a helicopter*

(1) *Weighing of a helicopter*

(i) New helicopters are normally weighed at the factory and are eligible to be placed into operation without reweighing if the mass and balance records have been adjusted for alterations or modifications to the helicopter. Helicopters transferred from one San Marino operator with an approved mass control programme to another San Marino operator with an approved programme need not be weighed prior to use by the receiving operator unless more than 5 years have elapsed since the last weighing.

(ii) The individual mass and centre of gravity (CG) position of each helicopter shall be re-established periodically. The maximum interval between two weighings must be defined by the operator and must meet the requirements of OPS 3.605(b). In addition, the mass and the CG of each helicopter shall be re-established either by:

(A) Weighing; or

(B) Calculation, if the operator is able to provide the necessary justification to prove the validity of the method of calculation chosen,

whenever the cumulative changes to the dry operating mass exceed ± 0·5% of the maximum landing mass.

(2) *Weighing procedure*

(i) The weighing must be accomplished either by the manufacturer or by an approved maintenance organisation.

(ii) Normal precautions must be taken consistent with good practices such as:

(A) Checking for completeness of the helicopter and equipment;

(B) Determining that fluids are properly accounted for;

(C) Ensuring that the helicopter is clean; and

(D) Ensuring that weighing is accomplished in an enclosed building.

(iii) Any equipment used for weighing must be properly calibrated, zeroed, and used in accordance with the manufacturer's instructions. Each scale must be calibrated either by the manufacturer, by a civil department of weights and measures or by an appropriately authorised organisation within 2 years or within a time period defined by the manufacturer of the weighing equipment, whichever is less. The equipment must enable the mass of the helicopter to be established accurately (See AMC Appendix 1 to OPS 3.605, sub-paragraph (a)(2)(iii)).

(b) *Special standard masses for the traffic load*. In addition to standard masses for passengers and checked baggage, the operator can submit for approval to the Authority standard masses for other load items.

(c) *Helicopter loading*

(1) The operator must ensure that the loading of its helicopters is performed under the supervision of qualified personnel.

(2) The operator must ensure that the loading of the freight is consistent with the data used for the calculation of the helicopter mass and balance.

(3) The operator must comply with additional structural limits such as the floor strength limitations, the maximum load per running metre, the maximum mass per cargo compartment, and/or the maximum seating limits.

(4) The operator must take account of in-flight changes in loading (e.g. CAT hoist operations).

(d) *Centre of gravity limits*

(1) *Operational CG envelope*. Unless seat allocation is applied and the effects of the number of passengers per seat row, of cargo in individual cargo compartments and of fuel in individual tanks is accounted for accurately in the balance calculation, operational margins must be applied to the certificated centre of gravity envelope. In determining the CG margins, possible deviations from the assumed load distribution must be considered. If free seating is applied, the operator must introduce procedures to ensure corrective action by flight or cabin crew if extreme longitudinal seat selection occurs. The CG margins and associated operational procedures, including assumptions with regard to passenger seating, must be acceptable to the Authority. (See AMC Appendix 1 to OPS 3.605, sub-paragraph (d).)

(2) *In-flight centre of gravity*. Further to sub-paragraph (d)(1) above, the operator must show that the procedures fully account for the extreme variation in CG travel during flight caused by passenger/crew movement and fuel consumption/transfer.

Appendix 1 to OPS 3.620(h)

Procedure for Establishing Revised Standard Mass Values for Passengers and Baggage
See AMC to Appendix 1 to OPS 3.620(h))
(See AC to Appendix 1 to OPS 3.620(h))

(a) *Passengers*

(1) *Weight sampling method*. The average mass of passengers and their hand baggage must be determined by weighing, taking random samples. The selection of random samples must by nature and extent be representative of the passenger volume, considering the type of operation, the frequency of flights on various routes, in/outbound flights, applicable season and seat capacity of the helicopter.

(2) *Sample size*. The survey plan must cover the weighing of at least the greatest of:

(i) A number of passengers calculated from a pilot sample, using normal statistical procedures and based on a relative confidence range (accuracy) of 1% for all adult and 2% for separate male and female average masses; and

(ii) For helicopters:

(A) With a passenger seating capacity of 40 or more, a total of 2000 passengers; or

(B) With a passenger seating capacity of less than 40, a total number of 50 x (the passenger seating capacity).

(3) *Passenger masses.* Passenger masses must include the mass of the passengers' belongings which are carried when entering the helicopter. When taking random samples of passenger masses, infants shall be weighed together with the accompanying adult (See also OPS 3.607(d) and OPS 3.620(c), (d) and (e)).

(4) *Weighing location*. The location for the weighing of passengers shall be selected as close as possible to the helicopter, at a point where a change in the passenger mass by disposing of or by acquiring more personal belongings is unlikely to occur before the passengers board the helicopter.

(5) *Weighing machine*. The weighing machine to be used for passenger weighing shall have a capacity of at least 150 kg. The mass shall be displayed at minimum graduations of 500 g. The weighing machine must be accurate to within 0·5% or 200 g whichever is the greater.

(6) *Recording of mass values*. For each flight the mass of the passengers, the corresponding passenger category (i.e. male/female/children) and the flight number must be recorded.

(b) *Checked baggage*. The statistical procedure for determining revised standard baggage mass values based on average baggage masses of the minimum required sample size is basically the same as for passengers and as specified in sub-paragraph (a)(1) (see also AMC OPS 3.620(h)). For baggage, the relative confidence range (accuracy) amounts to 1%. A minimum of 2000 pieces of checked baggage must be weighed.

(c) *Determination of revised standard mass values for passengers and checked baggage*

(1) To ensure that, in preference to the use of actual masses determined by weighing, the use of revised standard mass values for passengers and checked baggage does not adversely affect operational safety, a statistical analysis (see AMC OPS 3.620(h)) must be carried out. Such an analysis will generate average mass values for passengers and baggage as well as other data.

(2) On helicopters with 20 or more passenger seats, these averages apply as revised standard male and female mass values.

(3) On smaller helicopters, the following increments must be added to the average passenger mass to obtain the revised standard mass values:

Number of passenger seats	Required mass increment
1 – 5 incl.	16 kg
6 – 9 incl.	8 kg
10 – 19 incl.	4 kg

Alternatively, all adult revised standard (average) mass values may be applied on helicopters with 30 or more passenger seats. Revised standard (average) checked baggage mass values are applicable to helicopters with 20 or more passenger seats.

(4) Operators have the option to submit a detailed survey plan to the Authority for approval and subsequently a deviation from the revised standard mass value provided this deviating value is determined by use of the procedure explained in this Appendix. Such deviations must be reviewed at intervals not exceeding 5 years. (See AC to Appendix 1 to OPS 3.620(h))

(5) All adult revised standard mass values must be based on a male/female ratio of 80/20 in respect of all flights. If the operator wishes to obtain approval for use of a different ratio on specific routes or flights then data must be submitted to the Authority showing that the alternative male/female ratio is conservative and covers at least 84% of the actual male/female ratios on a sample of at least 100 representative flights.

(6) The average mass values found are rounded to the nearest whole number in kg. Checked baggage mass values are rounded to the nearest 0·5 kg figure, as appropriate.

Appendix 1 to OPS 3.625

Mass and Balance Documentation
(See OPS 3.625)
(See AMC Appendix 1 to OPS 3.625)

(a) *Mass and balance documentation*

(1) *Contents*

(i) The mass and balance documentation must contain the following information:

(A) The helicopter registration and type;

(B) The flight identification number and date;

(C) The identity of the Commander;

(D) The identity of the person who prepared the document;

(E) The dry operating mass and the corresponding CG of the helicopter;

(F) The mass of the fuel at take-off and the mass of trip fuel;

(G) The mass of consumables other than fuel;

(H) The components of the load including passengers, baggage, freight and ballast;

(I) The Take-off Mass, Landing Mass;

(J) The load distribution;

(K) The applicable helicopter CG positions; and

(L) The limiting mass and CG values.

(ii) Subject to the approval of the Authority, the operator may omit some of this Data from the mass and balance documentation.

(2) *Last Minute Change*. If any last minute change occurs after the completion of the mass and balance documentation, this must be brought to the attention of the commander and the last minute change must be entered on the mass and balance documentation. The maximum allowed change in the number of passengers or hold load acceptable as a last minute change must be specified in the Operations Manual. If this number is exceeded, new mass and balance documentation must be prepared.

(b) *Computerised systems*. Where mass and balance documentation is generated by a computerised mass and balance system, the operator must verify the integrity of the output data. He must establish a system to check that amendments of his input data are incorporated properly in the system and that the system is operating correctly on a continuous basis by verifying the output data at intervals not exceeding 6 months.

(c) *On-board mass and balance systems*. The operator must obtain the approval of the Authority if he wishes to use an on-board mass and balance computer system as a primary source for despatch.

(d) *Datalink*. When mass and balance documentation is sent to helicopters via datalink, a copy of the final mass and balance documentation as accepted by the commander must be available on the ground.

SUBPART K

INSTRUMENTS AND EQUIPMENT

OPS 3.630 General Introduction

(See AMC OPS 3.630)

(a) [A helicopter shall be equipped with instruments that will enable the flight crew to control the flight path of the helicopter, carry out any required procedural manoeuvres and observe the operating limitations of the helicopter in the expected operating conditions.]

(b) In addition to the minimum equipment necessary for the issuance of a certificate of airworthiness, the instruments, equipment and flight documents prescribed in this Subpart shall be installed or carried, as appropriate, in helicopters according to the helicopter used and to the circumstances under which the flight is to be conducted. The prescribed instruments and equipment, including their installation, shall be approved or accepted by the Authority.

(c) The operator shall ensure that a flight does not commence unless the instruments and equipment required under this Subpart are:

(1) approved, except as specified in sub-paragraph (d), and installed in accordance with the requirements applicable to them, including the minimum performance standard and the operational and airworthiness requirements; and

(2) in operable condition for the kind of operation being conducted except as provided in the MEL (OPS 3.030 refers).

(d) Instruments and equipment minimum performance standards are those prescribed in the applicable TSOs unless different performance standards are prescribed in the operational or airworthiness codes. Instruments and equipment complying with design and performance specifications on the date of OPS implementation may remain in service, or be installed, unless additional requirements are prescribed in this Subpart. Instruments and equipment that have already been approved do not need to comply with a revised TSO or a revised specification, unless a retroactive requirement is prescribed.

(e) The following items shall not be required to have an equipment approval:

(1) Electric torches referred to in OPS 3.640(a)(4);

(2) An accurate time piece referred to in OPS 3.650(b) & 3.652(b);

(3) Chart holder referred to in OPS 3.652(n).

(4) First aid kits referred to in OPS 3.745;

(5) Megaphones referred to in OPS 3.810;

(6) Survival and pyrotechnic signalling equipment referred to in OPS 3.835(a) and (c); and

(7) Sea anchors and equipment for mooring, anchoring or manoeuvring amphibians on water referred to in OPS 3.840.

(f) If equipment is to be used by one flight crew member at his station during flight, it must be readily operable from his station. When a single item of equipment is required to be operated by more than one flight crew member it must be installed so that the equipment is readily operable from any station at which the equipment is required to be operated.

(g) Those instruments that are used by any one flight crew member shall be so arranged as to permit the flight crew member to see the indications readily from his station, with the minimum practicable deviation from the position and line of vision which he normally assumes when looking forward along the flight path. Whenever a single instrument is required in a helicopter operated by more than 1 flight crew member it must be installed so that the instrument is visible from each applicable flight crew station.

(h) A helicopter shall be equipped with instruments that will enable the flight crew to control the flight path of the helicopter, carry out any required procedural manoeuvres and observe the operating limitations of the helicopter in the expected operating conditions.

OPS 3.640 Helicopter Operating Lights

The operator shall not operate a helicopter unless it is equipped with:

(a) For flight by day under VFR:

(1) Anti-collision light system;

(b) For flight under IFR or by night, in addition to equipment specified in subparagraph (a) above:

(1) Lighting supplied from the helicopter's electrical system to provide adequate illumination for all instruments and equipment essential to the safe operation of the helicopter; and

(2) Lighting supplied from the helicopter's electrical system to provide illumination in all passenger compartments; and

(3) An electric torch for each required crew member readily accessible to crew members when seated at their designated station; and

(4) Navigation/position lights; and

(5) Two landing lights of which at least one is adjustable in flight so as to illuminate the ground in front of and below the helicopter and the ground on either side of the helicopter; and

(6) Lights to conform with the International Regulations for Preventing Collisions at Sea if the helicopter is amphibious.

OPS 3.647 Equipment for Operations Requiring a Radio Communication and/or Radio Navigation System

(See AMC OPS 3.647)

Whenever a radio communication and/or radio navigation system is required, the operator shall not conduct operations unless the helicopter is equipped with a headset with boom microphone or equivalent and a transmit button on the flight controls for each required pilot and/or crew member at his working station.

OPS 3.650 Day VFR Operations – Flight and Navigational Instruments and Associated Equipment
(See AMC OPS 3.650/3.652)
(See AMC OPS 3.650/3.652)

The operator shall not operate a helicopter by day in accordance with Visual Flight Rules (VFR) unless it is equipped with the flight and navigational instruments and associated equipment and, where applicable, under the conditions stated in the following sub-paragraphs:

(a) A magnetic compass;

(b) An accurate timepiece indicating the time in hours, minutes, and seconds;

Note: This instrument may be aircraft equipment or carried in the helicopter.

(c) A sensitive pressure altimeter calibrated in feet with a sub-scale setting, calibrated in hectopascals/millibars, adjustable for any barometric pressure likely to be set during flight;

(d) An airspeed indicator calibrated in knots;

(e) A vertical speed indicator;

(f) A slip indicator;

(g) A means of indicating on the flight deck the outside air temperature calibrated in degrees Celsius (see AMC OPS 3.650(g) & 3.652(k).)

(h) Whenever two pilots are required the second pilot's station shall have separate instruments as follows:

(1) A sensitive pressure altimeter calibrated in feet with a sub-scale setting calibrated in hectopascals/millibars, adjustable for any barometric pressure likely to be set during flight;

(2) An airspeed indicator calibrated in knots;

(3) A vertical speed indicator; and

(4) A slip indicator.

(i) In addition to the flight and navigational equipment required by sub-paragraphs (a) to (h) above, helicopters with a maximum certificated take-off mass (MCTOM) over 3175 kg or any helicopter operating over water when out of sight of land or when the visibility is less than 1500 m, shall be equipped with the following flight instruments:

(1) An attitude indicator; and

(2) A gyroscopic direction indicator.

(j) Whenever duplicate instruments are required, the requirement embraces separate displays for each pilot and separate selectors or other associated equipment where appropriate;

(k) All helicopters must be equipped with means for indicating when power is not adequately supplied to the required flight instruments; and

(l) Each airspeed indicating system must be equipped with a heated pitot tube or equivalent means for preventing malfunction due to either condensation or icing for helicopters with a maximum certificated take-off mass (MCTOM) over 3175 kg or having a maximum approved passenger seating configuration (MAPSC) of more than 9.

OPS 3.652 IFR or Night Operations – Flight and Navigational Instruments and Associated Equipment
(See AMC OPS 3.650/3.652)
(See AMC OPS 3.650/3.652)

[The operator shall not operate a helicopter in accordance with Instrument Flight Rules (IFR) or by night in accordance with Visual Flight Rules (VFR), or when the helicopter cannot be maintained in a desired attitude without reference to one or more flight instruments, unless it is equipped with the flight and navigational instruments and associated equipment and, where applicable, under the conditions stated in the following sub-paragraphs:]

(a) A magnetic compass;

(b) A means of measuring and displaying the time in hours, minutes, and seconds;

Note: This instrument may be aircraft equipment or carried in the helicopter.

(c) Two sensitive pressure altimeters calibrated in feet, with sub-scale settings calibrated in hectopascals/millibars, adjustable for any barometric pressure likely to be set during flight. For single pilot night VFR operations one pressure altimeter may be substituted by a radio altimeter.

(d) An airspeed indicating system with heated pitot tube or equivalent means for preventing malfunctioning due to either condensation or icing including an annunciation of pitot heater failure. The pitot heater failure annunciation requirement does not apply to those helicopters with a maximum approved passenger seating configuration (MAPSC) of 9 or less or a maximum certificated take-off mass (MCTOM) of 3175 kg or less and issued with an individual Certificate of Airworthiness prior to 1 August 1999 (see AMC OPS 3.652(d) & (m)(2));

(e) A vertical speed indicator;

(f) A slip indicator;

(g) An attitude indicator;

(h) A single standby attitude indicator (artificial horizon) capable of being used from either pilot's station that:

(1) Provides reliable operation for a minimum of 30 minutes or the time required to fly to a suitable alternate landing site when operating over hostile terrain or offshore, whichever is the greater, after total failure of the normal electrical generating system, taking into account other loads on the emergency power supply and operational procedures;

(2) Operates independently of any other attitude indicating system;

(3) Is operative automatically after total failure of the normal electrical generating system; and

(4) Is appropriately illuminated during all phases of operation;

(i) In complying with sub-paragraph (h) above, it must be clearly evident to the flight crew when the standby attitude indicator, required by that paragraph, is being operated by emergency power. Where the standby attitude indicator has its own dedicated power supply there shall be an associated indication clearly visible when this supply is in use.

(j) A gyroscopic direction indicator for VFR night and a magnetic gyroscopic direction indicator for IFR;

(k) A means of indicating in the flight crew compartment the outside air temperature calibrated in degrees Celsius (see AMC OPS 3.650(g) and 3.652(k)); and

(l) An alternate source of static pressure for the altimeter and the airspeed and vertical speed indicators; and

(m) Whenever two pilots are required the second pilot's station shall have separate instruments as follows:

(1) A sensitive pressure altimeter calibrated in feet with a sub-scale setting, calibrated in hectopascals/millibars, adjustable for any barometric pressure setting likely to be encountered during flight which may be one of the two altimeters required by sub-paragraph (c) above;

(2) An airspeed indicating system with heated pitot tube or equivalent means for preventing malfunctioning due to either condensation or icing including an annunciation of pitot heater failure. The pitot heater failure annunciation requirement does not apply to those helicopters with a maximum approved passenger seating configuration of 9 or less or a maximum certificated take-off mass (MCTOM) of 3175 kg or less and issued with an individual Certificate of Airworthiness prior to 01 August 1999 (see AMC OPS 3.652(d) and (m)(2));

(3) A vertical speed indicator;

(4) A slip indicator;

(5) An attitude indicator; and

(6) A gyroscopic direction indicator for VFR night and a magnetic gyroscopic direction indicator for IFR.

(n) For IFR operations, a chart holder in an easily readable position which can be illuminated for night operations.

(o) Whenever duplicate instruments are required, the requirement embraces separate displays for each pilot and separate selectors or other associated equipment where appropriate; and

(p) All helicopters must be equipped with means for indicating when power is not adequately supplied to the required flight instruments.

(q) Notwithstanding OPS 3.430(d), where helicopters are equipped with automatic landing systems, HUD or equivalent displays, EVS, SVS or CVS, or any combination of those systems into a hybrid system, criteria for the use of such systems for the safe operation of a helicopter shall be established by the Authority.

Note: Automatic landing system — helicopter is an automatic approach using airborne systems which provide automatic control of the flight path, to a point aligned with the landing surface, from which the pilot can transition to a safe landing by means of natural vision without the use of automatic control.

OPS 3.655 Additional Equipment for Single Pilot Operation Under IFR
(See AMC OPS 3.655)

The operator shall not conduct single pilot IFR operations unless the helicopter is equipped with an autopilot with, at least, altitude hold and heading mode, except for helicopters with a maximum approved passenger seating configuration (MAPSC) of 6 or less first certificated for single pilot IMC operations on or before 01 January 1979.

OPS 3.660 Radio Altimeters

(a) The operator shall not operate a helicopter on a flight over water;

(1) when operating out of sight of the land; or

(2) when the visibility is less than 1 500 m; or

(3) at night; or

(4) at a distance from land corresponding to more than 3 minutes at normal cruising speed,

unless that helicopter is equipped with a radio altimeter with an audio voice warning, or other means acceptable to the Authority, operating below a pre-set height and a visual warning capable of operating at a height selectable by the pilot.

OPS 3.670 Airborne Weather Radar Equipment

The operator shall not operate a helicopter with a maximum approved passenger seating configuration (MAPSC) of more than 9 under IFR or at night when current weather reports indicate that thunderstorms or other potentially hazardous weather conditions, regarded as detectable with airborne weather radar, may reasonably be expected along the route to be flown unless it is equipped with airborne weather radar equipment.

OPS 3.675 Equipment for Operations in Icing Conditions

(a) The operator shall not operate a helicopter in expected or actual icing conditions unless it is certificated and equipped to operate in icing conditions.

(b) The operator shall not operate a helicopter in expected or actual icing conditions at night unless it is equipped with a means to illuminate or detect the formation of ice. Any illumination that is used must be of a type that will not cause glare or reflection that would handicap crew members in the performance of their duties.

OPS 3.685 Flight Crew Interphone System

The operator shall not operate a helicopter on which a flight crew of more than one is required unless it is equipped with a flight crew interphone system, including headsets and microphones, not of a handheld type, for use by all members of the flight crew.

OPS 3.690 Crew member Interphone System

(a) The operator shall not operate a helicopter carrying a crew member other than a flight crew member unless it is equipped with a crew member interphone system.

(b) The crew member interphone system required by this paragraph must:

(1) operate independently of the public address system except for handsets, headsets, microphones, selector switches and signalling devices;

(2) provide a means of two-way communication between the flight crew compartment and each crew member station;

(3) be readily accessible for use from each of the required flight crew stations in the flight crew compartment;

and in addition for cabin crew members:

(4) be readily accessible for use at required cabin crew stations close to each separate or pair of floor level emergency exits;

(5) have an alerting system incorporating aural or visual signals for use by flight crew members to alert the cabin crew and for use by cabin crew members to alert the flight crew; and

(6) have a means for the recipient of a call to determine whether it is a normal call or an emergency call (See AMC OPS 3.690(b)(6)).

OPS 3.695 Public Address System

(a) Except as in (c) below, the operator shall not operate a helicopter with a maximum approved passenger seating configuration (MAPSC) of more than 9 unless a public address system is installed.

(b) The public address system required by this paragraph must:

(1) operate independently of the interphone systems except for handsets, headsets, microphones, selector switches and signalling devices;

(2) be readily accessible for immediate use from each required flight crew member station;

(3) be readily accessible for use from at least one cabin crew member station in the cabin, and each public address system microphone intended for cabin crew use must be positioned adjacent to a cabin crew member seat that is located near each required floor level emergency exit in the passenger compartment;

(4) be capable of operation within 10 seconds by a cabin crew member at each of those stations in the compartment from which its use is accessible;

(5) be audible and intelligible at all passenger seats, toilets and cabin crew seats and work stations; and

(6) following a total failure of the normal electrical generating system, provide reliable operation for a minimum of 10 minutes.

(c) For helicopters with a maximum approved passenger seating configuration (MAPSC) of more than 9 but less than 19, the Public Address System is not required if:

(1) the helicopter is designed without a bulkhead between pilot and passengers; and

(2) the operator is able to demonstrate that when in flight, the pilot's voice is audible and intelligible at all passenger's seats.

OPS 3.700 Cockpit Voice Recorders
(See Appendix 1 to OPS 3.700)
(See Appendix 1 to OPS 3.700/OPS 3.710/OPS 3.715)
(See Appendix 2 to OPS 3.700/OPS 3.710/OPS 3.715)

(a) All helicopters of a maximum certificated take-off mass of over 7 000 kg shall be equipped with a CVR.

(b) For helicopters not equipped with a FDR, at least main rotor speed shall be recorded on the CVR.

(c) CVRs and CARS shall not use magnetic tape or wire.

(d) All helicopters required to be equipped with a CVR, shall be equipped with a CVR which shall retain the information recorded during at least the last 2 hours of their operation.

OPS 3.710 Flight Data Recorders – Helicopters of between 2 250 kg and 3175 kg
(See Appendix 1 to OPS 3.700/OPS 3.710/OPS 3.715)
(See Appendix 2 to OPS 3.700/OPS 3.710/OPS 3.715)
(See Appendix 1 to OPS 3.710/OPS 3.715)
(See Appendix 2 to OPS 3.710/OPS 3.715)
(See Appendix 3 to OPS 3.710/OPS 3.715)
(See Appendix 1 to OPS 3.710)
(See Appendix 2 to OPS 3.710)

(a) All turbine-engined helicopters of a maximum certificated take-off mass of over 2 250 kg, up to and including 3175 kg for which the application for type certification was submitted to a Contracting State on or after 01 January 2018 shall be equipped with:

(1) a FDR which shall record at least parameters 1-48 listed in Appendix 3 to OPS 3.710/OPS 3.715; or

(2) a Class C AIR or AIRS which shall record at least the flight path and speed parameters displayed to the pilot(s), as defined in Appendix 2 to OPS 3.710/OPS 3.715, paragraph (b)(3); or

(3) an ADRS which shall record at least parameters 1-7 listed in Appendix 2 to OPS 3.710.

(b) FDRs or ADRS shall not use engraving metal foil, frequency modulation (FM), photographic film or magnetic tape.

Note: "The application for type certification is submitted to a Contracting State" refers to the date of application of the original "Type Certificate" for the helicopter type, not the date of certification of particular helicopter variants or derivative models.

OPS 3.715 Flight Data Recorders – Helicopters Greater than 3175 kg

(See Appendix 1 to OPS 3.700/OPS 3.710/OPS 3.715)
(See Appendix 2 to OPS 3.700/OPS 3.710/OPS 3.715)
(See Appendix 1 to OPS 3.710/OPS 3.715)
(See Appendix 2 to OPS 3.710/OPS 3.715)
(See Appendix 3 to OPS 3.710/OPS 3.715)

(a) All helicopters of a maximum certificated take-off mass of over 3175 kg for which the individual certificate of airworthiness is first issued on or after 01 January 2016 shall be equipped with a FDR capable of recording at least the first 48 parameters listed in Appendix 3 to OPS 3.710/OPS 3.715.

(b) All helicopters of a maximum certificated take-off mass of over 3175 kg for which the application for type certification is submitted to a Contracting State on or after 01 January 2023 shall be equipped with a FDR capable of recording at least the first 53 parameters listed in Appendix 3 to OPS 3.710/OPS 3.715.

(c) All helicopters of a maximum certificated take-off mass of over 7 000 kg, or having a passenger seating configuration of more than 19, for which the individual certificate of airworthiness is first issued on or after 01 January 1989 shall be equipped with a FDR capable of recording at least the first 30 parameters listed in Appendix 3 to OPS 3.710/OPS 3.715.

(d) FDRs shall not use engraving metal foil, frequency modulation (FM), photographic film or magnetic tape.

(e) All FDRs shall retain the information recorded during at least the last 10 hours of their operation, and in addition sufficient information from the preceding take-off for calibration purposes.

(f) FDRs that meet the current parameter certification requirements of the FAA, Transport Canada or EASA in respect to commercial air transport operations, shall be exempt from meeting the parameter requirements of CAR OPS 3.715.

Note: "The application for type certification is submitted to a Contracting State" refers to the date of application of the original "Type Certificate" for the helicopter type, not the date of certification of particular helicopter variants or derivative models.

OPS 3.720 Flight Data Recorders – Data Link

(See Appendix 2 to OPS 3.710/OPS 3.715)

(a) All helicopters for which the individual certificate of airworthiness is first issued after 01 January 2016, which utilise any of the data link communications applications referred to in Appendix 2 to OPS 3.710/OPS 3.715 and are required to carry a CVR, shall record the data link communication messages on a crash protected flight recorder.

(b) All helicopters for which the individual certificate of airworthiness was first issued before 01 January 2016, that are required to carry a CVR and are modified on or after 01 January 2016 to use any of the data link communications applications referred to in Appendix 2 to OPS 3.710/OPS 3.715 shall record the data link communication messages on a crash protected flight recorder unless the installed data link communications equipment is compliant with a type certificate issued or aircraft modification first approved prior to 01 January 2016.

Note: The "aircraft modifications" refer to modifications to install the data link communications equipment on the aircraft (e.g. structural, wiring).

(c) The minimum recording duration shall be equal to the duration of the CVR.

(d) Data link recording shall be able to be correlated to the recorded cockpit audio.

OPS 3.727 Combination Recorders

All helicopters of a maximum certificated take-off mass over 2700 kg, required to be equipped with an FDR and/or a CVR, may alternatively be equipped with one combination recorder (FDR/CVR).

OPS 3.730 Seats, Seat Safety Belts, Harnesses and Child Restraint Devices

(a) The operator shall not operate a helicopter unless it is equipped with:

(1) A seat or berth for each person who is aged two years or more;

(2) For helicopters first issued with an individual Certificate of Airworthiness, up to and including 31 July 1999 a safety belt, with or without a diagonal shoulder strap, or a safety harness for use in each passenger seat for each passenger aged two years or more;

(3) For helicopters first issued with an individual Certificate of Airworthiness, on or after 01 August 1999, a safety belt, with a diagonal shoulder strap, or a safety harness for use in each passenger seat for each passenger aged 2 years or more;

(4) A restraint device for each passenger less than 2 years of age;

(5) A safety harness for each flight crew seat incorporating a device which will automatically restrain the occupant's torso in the event of rapid deceleration; and

(6) A safety harness for each cabin crew member's seat.

Note: This requirement does not preclude use of passenger seats by cabin crew members carried in excess of the required cabin crew complement.

(7) Seats for cabin crew members located, where possible, near a floor level emergency exit. If the number of required cabin crew members exceeds the number of floor level emergency exits the additional cabin crew seats required shall be located such that the cabin crew member(s) may best be able to assist passengers in the event of an emergency evacuation. Such seats shall be forward or rearward facing within 15° of the longitudinal axis of the helicopter.

(b) All safety harnesses and safety belts must have a single point release. A safety belt with a diagonal shoulder strap is permitted if it is not reasonably practicable to fit the latter.

OPS 3.731 Fasten Seat Belt and No-Smoking Signs

[The operator shall not operate a helicopter unless there are means of ensuring that the following information and instructions are conveyed to passengers:

(a) when seat belts or harnesses are to be fastened;

(b) when and how oxygen equipment is to be used if the carriage of oxygen is required;

(c) restrictions on smoking;

(d) location and use of life jackets or equivalent individual flotation devices where their carriage is required; and

(e) location and method of opening emergency exits.]

OPS 3.745 First-Aid Kits
(See AMC OPS 3.745)

(a) [The operator shall not operate a helicopter unless it is equipped with accessible and adequate medical supplies, which comprises a first-aid kit.]

(b) The operator shall ensure that first-aid kits are:

(1) Inspected periodically to confirm, to the extent possible, that contents are maintained in the condition necessary for their intended use; and

(2) Replenished at regular intervals, in accordance with instructions contained on their labels, or as circumstances warrant.

OPS 3.770 Supplemental Oxygen for Pressurised Helicopters

(a) A helicopter intended to be operated at flight altitudes greater than 10000 ft pressure altitude in personnel compartments shall be equipped with oxygen storage and dispensing apparatus capable of storing and dispensing the oxygen supplies.

(b) A helicopter intended to be operated at flight altitudes greater than 10000 ft pressure altitude but which is provided with means of maintaining pressure altitudes less than 10000 ft pressure altitude in personnel compartments shall be provided with oxygen storage and dispensing apparatus capable of storing and dispensing the oxygen supplies.

(c) [A helicopter, intended to be operated at flight altitudes less than 25000 ft, or which if operated at a flight altitude greater than 25000 ft, cannot descend safely within four minutes to an altitude of 13000 ft, shall be provided with automatically deployable oxygen equipment.] The total number of oxygen dispensing units shall exceed the number of passenger and cabin crew seats by at least 10 per cent.

(d) A flight to be operated with a pressurised helicopter shall not be commenced unless a sufficient quantity of stored breathing oxygen is carried to supply all the crew members and passengers, as is appropriate to the circumstances of the flight being undertaken, in the event of loss of pressurisation, for any period that the atmospheric pressure in any compartment occupied by them would be less than 10000 ft pressure altitude. [In addition, when the helicopter is operated at flight altitudes at which the atmospheric pressure is more than 25000 ft and cannot descend safely to an altitude of 13000 ft within four minutes, there shall be no less than a 10-minute supply for the occupants of the passenger compartment.]

OPS 3.772 Safeguarding of Cabin Crew and Passengers in Pressurised Helicopters in the Event of Loss of Pressurisation

(a) Cabin crew shall be safeguarded so as to ensure reasonable probability of their retaining consciousness during any emergency descent which may be necessary in the event of loss of pressurisation and, in addition, they should have such means of protection as will enable them to administer first aid to passengers during stabilized flight following the emergency.

(b) Passengers shall be safeguarded by such devices or operational procedures as will ensure reasonable probability of their surviving the effects of hypoxia in the event of loss of pressurisation.

Note: It is not envisaged that cabin crew will always be able to provide assistance to passengers during emergency descent procedures which may be required in the event of loss of pressurisation.

OPS 3.775 Supplemental Oxygen - Non-pressurised Helicopters
(See Appendix 1 to OPS 3.775)

(a) *General*

(1) The operator shall not operate a non-pressurised helicopter at pressure altitudes above 10000 ft unless supplemental oxygen equipment, capable of storing and dispensing the oxygen supplies required, is provided.

(2) The amount of supplemental oxygen for sustenance required for a particular operation shall be determined on the basis of flight altitudes and flight duration, consistent with the operating procedures established for each operation in the Operations Manual and with the routes to be flown, and with the emergency procedures specified in the Operations Manual.

(3) A helicopter intended to be operated above 10000 ft pressure altitude shall be provided with equipment capable of storing and dispensing the oxygen supplies required.

(b) *Oxygen supply requirements*

(1) *Flight crew members*. Each member of the flight crew on duty in the cockpit shall be supplied with supplemental oxygen in accordance with Appendix 1. If all occupants of cockpit seats are supplied from the flight crew source of oxygen supply then they shall be considered as flight crew members on cockpit duty for the purpose of oxygen supply.

(2) *Cabin crew members, additional crew members and passengers*. Cabin crew members and passengers shall be supplied with oxygen in accordance with Appendix 1. Cabin crew members carried in addition to the minimum number of cabin crew members required, and additional crew members, shall be considered as passengers for the purpose of oxygen supply.

OPS 3.790 Hand Fire Extinguishers
(See AMC OPS 3.790)

(a) [The operator shall not operate a helicopter unless portable fire extinguishers of a type which, when discharged, will not cause dangerous contamination of the air within the helicopter. At least one shall be located in:

(1) the pilot's compartment; and

(2) each passenger compartment that is separate from the pilot's compartment and that is not readily accessible to the flight crew.]

(b) The type and quantity of extinguishing agent must be suitable for the kinds of fires likely to occur in the compartment where the extinguisher is intended to be used and, for personnel compartments, must minimise the hazard of toxic gas concentration;

(c) At least one hand fire extinguisher, containing Halon 1211 (bromochlorodifluoro-methane, $CBrClF_2$), or equivalent as the extinguishing agent, must be conveniently located in the cockpit for use by the flight crew;

Note: Any extinguishing agent used in a portable fire extinguisher in helicopter for which the individual certificate of airworthiness is first issued on or after 31 December 2018 shall not be of a type listed in Annex A, Group II of the Montreal Protocol on Substances That Deplete the Ozone Layer, 8th Edition, 2009.

(d) At least one hand fire extinguisher must be located in, or readily accessible for use in, each galley not located on the main passenger deck;

(e) At least one readily accessible hand fire extinguisher must be available for use in each cargo compartment which is accessible to crew members during flight for the purpose of firefighting.
[ ]

OPS 3.795 Built-in Lavatory Fire Extinguisher

Any agent used in a built-in fire extinguisher for each lavatory disposal receptacle for towels, paper or waste in a helicopter for which the individual certificate of airworthiness is first issued on or after 31 December 2011 and any extinguishing agent used in a portable fire extinguisher in a helicopter for which the individual certificate of airworthiness is first issued on or after 31 December 2016 shall:

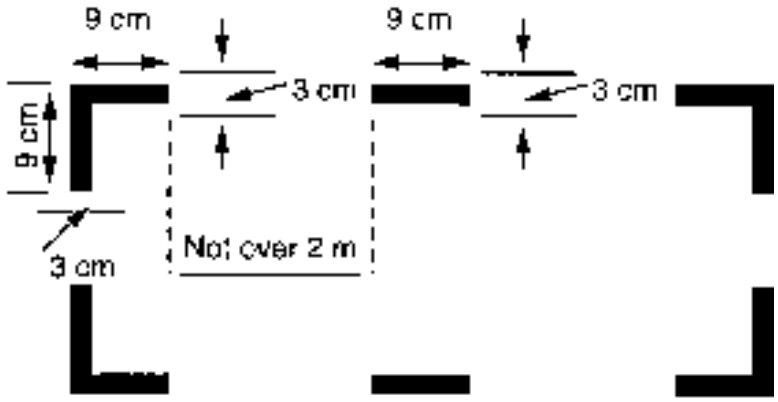
(a) meet the applicable minimum performance requirements of the State of Registry; and

(b) not be of a type listed in the 1987 *Montreal Protocol on Substances that Deplete the Ozone Layer* as it appears in the Eighth Edition of the *Handbook for the Montreal Protocol on Substances that Deplete the Ozone La*yer, Annex A, Group II.

OPS 3.800 Marking of Break-in Points

(a) The operator shall ensure that, if areas of the fuselage suitable for break-in by rescue crews in emergency are available on a helicopter, such areas shall be marked as shown below. The colour of the markings shall be red or yellow, and if necessary they shall be outlined in white to contrast with the background.

(b) If the corner markings are more than 2 metres apart, intermediate lines 9 cm x 3 cm shall be inserted so that there is no more than 2 metres between adjacent marks.



OPS 3.810 Megaphones
(See AMC OPS 3.810)

The operator shall not operate a helicopter with a total maximum approved passenger seating configuration (MAPSC) of more than 19 unless it is equipped with portable battery-powered megaphones readily available for use by crew members during an emergency evacuation.

OPS 3.815 Emergency Lighting

The operator shall not operate a helicopter which has a maximum approved passenger seating configuration (MAPSC) of more than 19 unless it is equipped with:

(a) An emergency lighting system having an independent power supply to provide a source of general cabin illumination to facilitate the evacuation of the helicopter; and

(b) Illuminated emergency exit marking and locating signs.

OPS 3.817 EFB Equipment

(a) Where portable EFBs are used on board, the operator shall ensure that they do not affect the performance of the helicopter systems, equipment or the ability to operate the helicopter.

(b) Where EFBs are used on board a helicopter the operator shall:

(1) assess the safety risk(s) associated with each EFB function;

(2) establish and document the procedures for the use of, and training requirements for, the device and each EFB function; and

(3) ensure that, in the event of an EFB failure, sufficient information is readily available to the flight crew for the flight to be conducted safely.

(c) The Authority, as the State of the Operator, shall issue a specific approval for the operational use of EFB functions to be used for the safe operations of helicopters.

(d) When issuing the specific approval for the operational use of EFBs, the Authority shall ensure that:

(1) the EFB equipment and its associated installation hardware, including interaction with helicopter systems if applicable, meet the appropriate airworthiness certification requirements;

(2) the operator has assessed the safety risks associated with the operations supported by the EFB function(s);

(3) the operator has established requirements for redundancy of the information (if appropriate) contained and displayed by the EFB function(s);

(4) the operator has established and documented procedures for the management of the EFB function(s) including any databases it may use; and

(5) the operator has established and documented the procedures for the use of, and training requirements for, the EFB, the EFB function(s).

OPS 3.820 Automatic Emergency Locator Transmitter

(See AMC OPS 3.820)

(a) The operator shall not operate a helicopter unless it is equipped with an automatic Emergency Locator Transmitter (ELT).

(b) The operator shall not operate a helicopter in Performance Class 1 or 2 on a flight over water in a hostile environment as defined in OPS 3.480(a)(12)(ii)(A) at a distance from land corresponding to more than 10 minutes flying time at normal cruising speed, on a flight in support of or in connection with the offshore exploitation of mineral resources (including gas), unless it is equipped with an Automatically Deployable Emergency Locator Transmitter (ELT(AD)).

(c) The operator shall ensure that all ELTs are capable of transmitting simultaneously on 121.5 MHz and 406 MHz, are coded in accordance with ICAO Annex 10 and are registered with the national agency responsible for initiating Search and Rescue or another nominated agency.

OPS 3.825 Life Jackets

(See AMC OPS 3.825)

(a) [Helicopters operating in performance Class 1 or 2 and operating in accordance with the provisions of OPS 3.843;

(1) shall be equipped with one life jacket, or equivalent individual flotation device, for each person on board, stowed in a position easily accessible from the seat or berth of the person for whose use it is provided.

(2) for offshore operations, the life jacket shall be worn constantly unless the occupant is wearing an integrated survival suit that includes the functionality of the life jacket;

(b) Helicopters operating in performance Class 3 when operating beyond autorotational distance from land;

(1) shall be equipped with one life jacket, or equivalent individual flotation device, for each person on board, stowed in a position easily accessible from the seat or berth of the person for whose use it is provided; and

(2) when operating beyond autorotational distance from land, the life jacket shall be worn unless the occupant is wearing an integrated survival suit that includes the functionality of the life jacket.

(c) In the case of helicopters operating in performance Class 2 or 3, when taking off or landing at a heliport where the take-off or approach path is so disposed over water that in the event of a mishap there would be likelihood of a ditching, at least the equipment required in (a)(1) above shall be carried.

(d) Each life jacket and equivalent individual flotation device, when carried, shall be equipped with a means of electric illumination for the purpose of facilitating the location of persons.]

OPS 3.827 Crew Survival Suits
(See AMC OPS 3.827)

(a) The operator shall not operate a helicopter in Performance Class 1 or 2 on a flight over water at a distance from land corresponding to more than 10 minutes flying time at normal cruising speed from land on a flight in support of or in connection with the offshore exploitation of mineral resources (including gas) when the weather report or forecasts available to the commander indicate that the sea temperature will be less than plus 10°C during the flight or when the estimated rescue time exceeds the estimated survival time unless each member of the crew is wearing a survival suit.

(b) The operator shall not operate a helicopter in Performance Class 3 on a flight over water beyond auto-rotational or safe forced landing distance from land when the weather report or forecasts available to the commander indicate that the sea temperature will be less than plus 10°C during the flight, unless each member of the crew is wearing a survival suit.

Note: When the elevation and strength of the sun results in a high temperature hazard on the flight deck, the flight crew may be exempted from paragraph (b) provided a survival suit is accessible to each pilot.

OPS 3.830 Life-rafts and Survival ELTs on Extended Overwater Flights
(See Appendix 1 to OPS 3.830)

The operator shall not operate a helicopter on a flight over water at a distance from land corresponding to more than 10 minutes flying time at normal cruising speed when operating in Performance Class 1 or 2, or 3 minutes flying time at normal cruising speed when operating in Performance Class 3 unless it carries:

(a) In the case of a helicopter carrying less than 12 persons, a minimum of one life-raft with a rated capacity of not less than the maximum number of persons on board;

(b) In the case of a helicopter carrying more than 11 persons, a minimum of two life-rafts sufficient together to accommodate all persons capable of being carried on board. Should one life-raft of the largest rated capacity be lost, the overload capacity of the remaining life-raft(s) shall be sufficient to accommodate all persons on the helicopter (See AMC OPS 3.830(a)(2));

(c) At least one survival Emergency Locator Transmitter (ELT(S)) for each life raft carried (but not more than a total of 2 ELTs are required), capable of transmitting on the distress frequencies prescribed in Appendix 1 to OPS 3.830. (See also AMC OPS 3.830(a)(3));

(d) Emergency exit illumination; and

(e) Lifesaving equipment including means of sustaining life as appropriate to the flight to be undertaken.

OPS 3.835 Survival Equipment
(See AMC OPS 3.835)

[The operator shall not operate a helicopter on extended overwater flights or in areas where search and rescue would be especially difficult unless it is equipped with the following:]

(a) Signalling equipment to make the pyrotechnical distress signals described in CAR OPS 00;

(b) At least one survival Emergency Locator Transmitter (ELT(S)) capable of transmitting on the distress frequencies prescribed in Appendix 1 to OPS 3.830 (see also AMC OPS 3.830(a)(3)); and

(c) Additional survival equipment for the route to be flown taking account of the number of persons on board (see AMC OPS 3.835(c)).

OPS 3.837 Additional Requirements for Helicopters Operating to or from Helidecks located in a Hostile Sea Area (as defined in OPS 3.480(a)(11)(ii)(A))

(a) The operator shall not operate a helicopter on a flight to or from a helideck located in a hostile sea area at a distance from land corresponding to more than 10 minutes flying time at normal cruising speed on a flight in support of or in connection with the offshore exploitation of mineral resources (including gas) unless:

(1) When the weather report or forecasts available to the commander indicate that the sea temperature will be less than plus 10°C during the flight, or when the estimated rescue time exceeds the calculated survival time, or the flight is planned to be conducted at night, all persons on board are wearing a survival suit (see AMC OPS 3.827);

(2) All life rafts carried in accordance with OPS 3.830 are installed so as to be usable in the sea conditions in which the helicopter's ditching, flotation and trim characteristics were evaluated in order to comply with the ditching requirements for certification (See AMC OPS 3.837(a)(2));

(3) The helicopter is equipped with an emergency lighting system having an independent power supply to provide a source of general cabin illumination to facilitate the evacuation of the helicopter;

(4) All emergency exits, including crew emergency exits, and its means of opening are conspicuously marked for the guidance of occupants using the exits in daylight or in the dark. Such markings are designed to remain visible if the helicopter is capsized and the cabin is submerged;

(5) All non-jettisonable doors which are designated as Ditching Emergency Exits have a means of securing them in the open position so they do not interfere with occupants egress in all sea conditions up to the maximum required to be evaluated for ditching and flotation;

(6) All doors, windows or other openings in the passenger compartment authorised by the Authority as suitable for the purpose of underwater escape, are equipped so as to be operable in an emergency;

(7) Lifejackets are worn at all times; unless the passenger or crew member is wearing an integrated survival suit that meets the combined requirement of the survival suit and lifejacket which is acceptable to the Authority.

OPS 3.840 Helicopters Certificated for Operating on Water - Miscellaneous Equipment

The operator shall not operate on water a helicopter certificated for operating on water unless it is equipped with:

(a) A sea anchor and other equipment necessary to facilitate mooring, anchoring or manoeuvring the aircraft on water, appropriate to its size, weight and handling characteristics; and

(b) Equipment for making the sound signals prescribed in the International Regulations for preventing collisions at sea, where applicable.

OPS 3.843 All Helicopters on Flights Over Water - Ditching

(a) The operator shall not operate a helicopter in Performance Class 1 or 2 on a flight over water in a hostile environment at a distance from land corresponding to more than 10 minutes flying time at normal cruise speed unless that helicopter is so designed for landing on water or is certificated in accordance with ditching provisions is fitted with a permanent or rapidly deployable means of flotation so as to ensure a safe ditching of the helicopter. Sea state shall be an integral part of ditching information and certification.

(b) [The operator shall not operate a helicopter in Performance Class 1 or 2 on a flight over water in a non-hostile environment at a distance from land corresponding to more than 10 minutes flying time at normal cruise speed unless that helicopter is; so designed for landing on water; or is certificated in accordance with ditching provisions and is fitted with a permanent or rapidly deployable means of flotation so as to ensure a safe ditching of the helicopter.

(c) The operator shall not operate a helicopter in Performance Class 2, when taking-off or landing over water, unless that helicopter is; so designed for landing on water; or is certificated in accordance with ditching provisions and is fitted with a permanent or rapidly deployable means of flotation so as to ensure a safe ditching of the helicopter (See AMC OPS 3.843(c)). Except where, for the purpose of minimising exposure, the landing or take-off at a HEMS operating site located in a congested environment is conducted over water, unless otherwise required by the Authority.

(d) The operator shall not operate a helicopter in Performance Class 3 on a flight over water beyond safe forced landing distance from land unless that helicopter is; so designed for landing on water; or is certificated in accordance with ditching provisions and is fitted with a permanent or rapidly deployable means of flotation so as to ensure a safe ditching of the helicopter.]

Appendix 1 to OPS 3.700
Cockpit Voice Recorder (CVR) and Cockpit Audio Recording System (CARS)

(a) Start and stop logic

The CVR or CARS shall start to record prior to the helicopter moving under its own power and record continuously until the termination of the flight when the helicopter is no longer capable of moving under its own power. In addition, depending on the availability of electrical power, the CVR or CARS shall start to record as early as possible during the cockpit checks prior to engine start at the beginning of the flight until the cockpit checks immediately following engine shutdown at the end of the flight.

(b) Signals to be recorded

(1) The CVR shall record simultaneously on four separate channels, or more, at least the following:

(i) voice communication transmitted from or received in the helicopter by radio;

(ii) aural environment on the flight deck;

(iii) voice communication of flight crew members on the flight deck using the helicopter's interphone system, if installed;

(iv) voice or audio signals identifying navigation or approach aids introduced in the headset or speaker; and

(v) voice communication of flight crew members using the passenger address system, if installed.

(c) The preferred CVR audio allocation should be as follows:

(1) pilot-in-command audio panel;

(2) co-pilot audio panel;

(3) additional flight crew positions and time reference; and

(4) cockpit area microphone.

(d) The CARS shall record simultaneously on two separate channels, or more, at least the following:

(1) voice communication transmitted from or received in the helicopter by radio;

(2) aural environment on the flight deck; and

(3) voice communication of flight crew members on the flight deck using the helicopter's interphone system, if installed.

(e) The preferred CARS audio allocation should be as follows:

(1) voice communication; and

(2) aural environment on the flight deck.

Appendix 1 to OPS 3.700/OPS 3.710/OPS 3.715
Flight Recorders - General

Note 1: The following applies to all crash protected flight recorders which comprise one or more of the following:

(1) a flight data recorder (FDR),

(2) a cockpit voice recorder (CVR)

(3) an airborne image recorder (AIR),

(4) a data link recorder (DLR).

When image or data link information is required to be recorded on a crash-protected flight recorder, it is permissible to record it on either the CVR or the FDR.

Note 2: The following applies to all lightweight flight recorders which comprise one or more of the following:

(1) an aircraft data recording system (ADRS),

(2) a cockpit audio recording system (CARS),

(3) an airborne image recording system (AIRS)

(4) a data link recording system (DLRS).

When image or data link information is required to be recorded on a lightweight flight recorder, it is permissible to record it on either the CARS or the ADRS.

(a) Non-deployable flight recorder containers shall be painted a distinctive orange colour;

(b) Non-deployable crash protected flight recorder containers shall;

(1) carry reflective material to facilitate their location; and

(2) have securely attached an automatically activated underwater locating device operating at a frequency of 37.5 kHz that operates for a minimum of 90 days.

(c) Automatic deployable flight recorder containers shall:

(1) be painted a distinctive orange colour, however the surface visible from outside the aircraft may be of another colour;

(2) carry reflective material to facilitate their location; and

(3) have an integrated automatically activated ELT.

(d) The flight recorder systems shall be installed so that:

(1) the probability of damage to the recordings is minimised;

(2) there is an aural or visual means for pre-flight checking that the flight recorder systems are operating properly; and

(3) if the flight recorder systems have an erasure device, the installation shall be designed to prevent operation of the device during flight time or crash impact; and

(4) for helicopters for which the individual certificate of airworthiness is first issued on or after 01 January 2023, a flight crew-operated erase function shall be provided on the flight deck which, when activated, modifies the recording of a CVR and AIR so that it cannot be retrieved using normal replay or copying techniques. The installation shall be designed to prevent activation during flight. In addition, the probability of an inadvertent activation of an erase function during an accident shall also be minimised.

Note: The erase function is intended to prevent access to CVR and AIR recordings by normal replay or copying means, but would not prevent accident investigation authorities access to such recordings by specialised replay or copying techniques.

(e) The crash protected flight recorder systems shall be installed so that they receive electrical power from a bus that provides the maximum reliability for operation of the flight recorder systems without jeopardizing service to essential or emergency loads.

(f) The lightweight flight recorders shall be connected to a power source having the characteristics which ensure proper and reliable recording in the operational environment.

(g) The flight recorder systems, when tested by methods approved by the appropriate certificating authority, shall be demonstrated to be suitable for the environmental extremes over which they are designed to operate.

(h) Means shall be provided for an accurate time correlation between the flight recorder systems recordings.

(i) The flight recorder system manufacturer shall provide the appropriate certificating authority with the following information in respect of the flight recorder systems:

(1) manufacturer's operating instructions, equipment limitations and installation procedures;

(2) parameter origin or source and equations which relate counts to units of measurement; and

(3) manufacturer's test reports;

(4) detailed information to ensure the continued serviceability of the flight recorder system.

(j) The holder of the airworthiness approval for the installation design of the flight recorder system shall make available the relevant continuing airworthiness information to the operator of the helicopter to be incorporated in the continuing airworthiness maintenance programme. This continuing airworthiness information shall cover in detail all the tasks required to ensure the continued serviceability of the flight recorder system.

Note 1: The flight recorder system is composed of the flight recorder as well as any dedicated sensors, hardware and software that provide information required by this Appendix.

Note 2: Conditions related to the continued serviceability of a flight recorder system are defined in Appendix 2 to OPS 3.700/OPS 3.710/OPS 3.715.

(k) Flight recorders shall be constructed, located and installed so as to provide maximum practical protection for the recordings in order that the recorded information may be preserved, recovered and transcribed. Flight recorders shall meet the prescribed crashworthiness and fire protection specifications.

Appendix 2 to OPS 3.700/OPS 3.710/OPS 3.715
Inspection of Flight Recorder Systems

(a) Prior to the first flight of the day, the built-in test features for the flight recorders and flight data acquisition unit (FDAU), when installed, shall be monitored by manual and/or automatic checks.

(b) FDR systems or ADRS, CVR systems or CARS, and AIR systems or AIRS shall have recording inspection intervals of one year. This period may be extended by the Authority to two years provided these systems have demonstrated a high integrity of serviceability and self-monitoring.

(c) DLR systems or DLRS shall have recording inspection intervals of two years. This period may be extended by the Authority to four years provided these systems have demonstrated a high integrity of serviceability and self-monitoring.

(d) Recording inspections shall be carried out as follows:

(1) an analysis of the recorded data from the flight recorders shall ensure that the recorder operates correctly for the nominal duration of the recording;

(2) the analysis of the FDR or ADRS recording shall evaluate the quality of the recorded data to determine if the bit error rate (including those errors introduced by recorder, the acquisition unit, the source of the data on the helicopter and by the tools used to extract the data from the recorder) is within acceptable limits and to determine the nature and distribution of the errors;

(3) the FDR or ADRS recording from a complete flight shall be examined in engineering units to evaluate the validity of all recorded parameters. Particular attention shall be given to parameters from sensors dedicated to the FDR or ADRS. Parameters taken from the aircraft's electrical bus system need not be checked if their serviceability can be detected by other aircraft systems;

(4) the readout facility shall have the necessary software to accurately convert the recorded values to engineering units and to determine the status of discrete signals;

(5) an annual examination of the recorded signal on the CVR or CARS shall be carried out by replay of the CVR or CARS recording. While installed in the aircraft, the CVR or CARS shall record test signals from each aircraft source and from relevant external sources to ensure that all required signals meet intelligibility standards;

(6) where practicable, during the examination, a sample of in-flight recordings of the CVR or CARS shall be examined for evidence that the intelligibility of the signal is acceptable; and

(7) an examination of the recorded images on the AIR or AIRS shall be carried out by replay of the AIR or AIRS recording. While installed in the aircraft, the AIR or AIRS shall record test images from each aircraft source and from relevant external sources to ensure that all required images meet recording quality standards.

(e) A flight recorder system shall be considered unserviceable if there is a significant period of poor quality data, unintelligible signals, or if one or more of the mandatory parameters is not recorded correctly.

(f) A report of the recording inspection shall be made available on request to regulatory authorities for monitoring purposes.

(g) Calibration of the FDR system:

(1) for those parameters which have sensors dedicated only to the FDR and are not checked by other means, recalibration shall be carried at an interval determined by the continuing airworthiness information for the FDR system. In the absence of such information, a recalibration shall be carried out at least every five years. The recalibration shall determine any discrepancies in the engineering conversion routines for the mandatory parameters and to ensure that parameters are being recorded within the calibration tolerances; and

(2) when the parameters of altitude and airspeed are provided by sensors that are dedicated to the FDR system, there shall be a recalibration performed at an interval determined by the continuing airworthiness information for the FDR system. In the absence of such information, a recalibration shall be carried out at least every two years.

Appendix 1 to OPS 3.710/OPS 3.715
Flight Data Recorder (FDR) and Aircraft Data Recording Systems (ADRS)

(a) Start and Stop Logic

The FDR or ADRS shall start to record prior to the helicopter moving under its own power and record continuously until the termination of the flight when the helicopter is no longer capable of moving under its own power.

(b) Parameters to be Recorded

(1) The parameters that satisfy the requirements for FDRs are listed in the paragraph (3) below. The number of parameters to be recorded shall depend on helicopter complexity. The parameters without an asterisk (*) are mandatory parameters which shall be recorded regardless of helicopter complexity. In addition, the parameters designated by an asterisk (*) shall be recorded if an information data source for the parameter is used by helicopter systems or the flight crew to operate the helicopter. However, other parameters may be substituted with due regard to the helicopter type and the characteristics of the recording equipment.

(2) If further FDR recording capacity is available, recording of the following additional information shall be considered:

(i) operational information from electronic display systems, such as electronic flight instrument systems (EFIS), electronic centralized aircraft monitor (ECAM) and engine indication and crew alerting system (EICAS); and

(ii) Additional engine parameters (EPR, N_1, fuel flow etc.)

(3) The following parameters shall satisfy the requirements for flight path and speed:

— Pressure altitude
— Indicated airspeed or calibrated airspeed
— Heading (primary flight crew reference)
— Pitch attitude
— Roll attitude
— Engine thrust/power
— Landing-gear status*
— Total or outside air temperature*
— Time*
— Navigation data*: drift angle, wind speed, wind direction, latitude/longitude
— Radio altitude*

Note: The parameters that satisfy the requirements for ADRS are listed in Appendix 2 to OPS 3.710.

(c) Additional Information

(1) The measurement range, recording interval and accuracy of parameters on installed equipment shall be verified by methods approved by the appropriate certificating authority.

(2) Documentation concerning parameter allocation, conversion equations, periodic calibration and other serviceability/maintenance information shall be maintained by the operator. The documentation needs to be sufficient to ensure that accident investigation authorities have the necessary information to read out the data in engineering units.

Appendix 2 to OPS 3.710/OPS 3.715
Data Link Recorder (DLR) Applications to be Recorded

(a) Where the helicopter flight path is authorised or controlled through the use of data link messages, all data link messages, both uplinks (to the helicopter) and downlinks (from the helicopter), shall be recorded on the aircraft. As far as practicable, the time the messages were displayed to the flight crew and the time of the responses shall be recorded.

Note: Sufficient information to derive the content of the data link communications message and the time the messages were displayed to the flight crew is needed to determine an accurate sequence of events on board the aircraft.

(b) Messages applying to the applications listed below shall be recorded. Applications without the asterisk (*) are mandatory applications which shall be recorded regardless of the system complexity. Applications with an (*) shall be recorded only as far as is practicable given the architecture of the system.

Item No.	Application type	Application description	Recording content
1	Data link initiation	This includes any applications used to log on to or initiate data link service. In FANS-1/A and ATN, these are ATS facilities notification (AFN) and context management (CM) respectively.	C
2	Controller/pilot communication	This includes any application used to exchange requests, clearances, instructions and reports between the flight crew and controllers on the ground. In FANS-1/A and ATN, this includes the CPDLC application. It also includes applications used for the exchange of oceanic (OCL) and departure clearances (DCL) as well as data link delivery of taxi clearances.	C
3	Addressed surveillance	This includes any surveillance application in which the ground sets up contracts for delivery of surveillance data. In FANS-1/A and ATN, this includes the automatic dependent surveillance — contract (ADS-C) application. Where parametric data are reported within the message they shall be recorded unless data from the same source are recorded on the FDR.	C
4	Flight information	This includes any service used for delivery of flight information to specific aircraft. This includes, for example, data link aviation weather report service (D-METAR), data link-automatic terminal service (D-ATIS), digital Notice to Airmen (D-NOTAM) and other textual data link services.	C
5	Aircraft broadcast surveillance	This includes elementary and enhanced surveillance systems, as well as automatic dependent surveillance — broadcast (ADS-B) output data. Where parametric data sent by the aeroplane are reported within the message they shall be recorded unless data from the same source are recorded on the FDR.	M*
6	Aeronautical operational control data	This includes any application transmitting or receiving data used for aeronautical operational control purposes (per the ICAO definition of operational control).	M*

Key:
C: Complete contents recorded.
M: Information that enables correlation to any associated records stored separately from the aeroplane.
*: Applications to be recorded only as far as is practicable given the architecture of the system.

Appendix 3 to OPS 3.710/1.715
Parameter Characteristics for Flight Data Recorders

Serial number	Parameter	Applicability	Measurement range	Maximum sampling and recording interval (seconds)	Accuracy limits (sensor input compared to FDR readout)	Recording resolution
1	Time (UTC when available, otherwise relative time count or GNSS time sync)		24 hours	4	±0.125% /h	1 s
2	Pressure altitude		−300 m (−1 000 ft) to maximum certificated altitude of aircraft +1 500 m (+5 000 ft)	1	±30 m to ±200 m (±100 ft to ±700 ft)	1.5 m (5 ft)
3	Indicated airspeed		As the installed pilot display measuring system	1	±3%	1 kt
4	Heading		360°	1	±2°	0.5°
5	Normal acceleration		−3 g to +6 g	0.125	±0.09 g excluding a datum error of ±0.045 g	0.004 g
6	Pitch attitude		±75° or 100% of useable range whichever is greater	0.5	±2°	0.5°
7	Roll attitude		±180°	0.5	±2°	0.5°
8	Radio transmission keying		On-off (one discrete)	1	—	—
9	Power on each engine		Full range	1 (per engine)	±2%	0.1% of full range
10	Main rotor:					
	Main rotor speed		50–130%	0.51	±2%	0.3% of full range
	Rotor brake		Discrete		—	—
11	Pilot input and/or control surface position — primary controls (collective pitch, longitudinal cyclic pitch, lateral cyclic pitch, tail rotor pedal)		Full range	0.5 (0.25 recommended)	±2% unless higher accuracy uniquely required	0.5% of operating range
12	Hydraulics, each system (low pressure and selection)		Discrete	1	—	—
13	Outside air temperature		Sensor range	2	±2°C	0.3°C

Serial number	Parameter	Applicability	Measurement range	Maximum sampling and recording interval (seconds)	Accuracy limits (sensor input compared to FDR readout)	Recording resolution
14*	Autopilot/ autothrottle/AFCS mode and engagement status		A suitable combination of discretes	1	—	—
15*	Stability augmentation system engagement		Discrete	1	—	—
16*	Main gearbox oil pressure		As installed	1	As installed	6.895 kN/m² (1 psi)
17*	Main gearbox oil temperature		As installed	2	As installed	1°C
18	Yaw rate		±400°/second	0.25	±1.5% maximum range excluding datum error of ±5%	±2°/s
19*	Sling load force		0 to 200% of certified load	0.5	±3% of maximum range	0.5% for maximum certified load
20	Longitudinal acceleration		±1 g	0.25	±0.015 g excluding a datum error of ±0.05 g	0.004 g
21	Lateral acceleration		±1 g	0.25	±0.015 g excluding a datum error of ±0.05 g	0.004 g
22*	Radio altitude		–6 m to 750 m (–20 ft to 2 500 ft)	1	±0.6 m (±2 ft) or ±3% whichever is greater below 150 m (500 ft) and ±5% above 150 m (500 ft)	0.3 m (1 ft) below 150 m (500 ft), 0.3 m (1 ft) + 0.5% of full range above 150 m (500 ft)
23*	Vertical beam deviation		Signal range	1	±3%	0.3% of full range
24*	Horizontal beam deviation		Signal range	1	±3%	0.3% of full range
25	Marker beacon passage		Discrete	1	—	—
26	Warnings		Discrete(s)	1	—	—
27	Each navigation receiver frequency selection		Sufficient to determine selected frequency	4	As installed	—
28*	DME 1 and 2 distances		0–370 km (0–200 NM)	4	As installed	1 852 m (1 NM)

Serial number	Parameter	Applicability	Measurement range	Maximum sampling and recording interval (seconds)	Accuracy limits (sensor input compared to FDR readout)	Recording resolution
29*	Navigation data (latitude/longitude, ground speed, drift angle, wind speed, wind direction)		As installed	2	As installed	As installed
30*	Landing gear and gear selector position		Discrete	4	—	—
31*	Engine exhaust gas temperature (T_4)		As installed	1	As installed	
32*	Turbine inlet temperature (ITT/TIT)		As installed	1	As installed	
33*	Fuel contents		As installed	4	As installed	
34*	Altitude rate		As installed	1	As installed	
35*	Ice detection		As installed	4	As installed	
36*	Helicopter health and usage monitor system		As installed	—	As installed	—
37	Engine control modes		Discrete	1	—	—
38*	Selected barometric setting (pilot and co-pilot)		As installed	64 (4 recommended)	As installed	0.1 mb (0.01 in Hg)
39*	Selected altitude (all pilot selectable modes of operation)		As installed	1	As installed	Sufficient to determine crew selection
40*	Selected speed (all pilot selectable modes of operation)		As installed	1	As installed	Sufficient to determine crew selection
41*	Selected Mach (all pilot selectable modes of operation)		As installed	1	As installed	Sufficient to determine crew selection
42*	Selected vertical speed (all pilot selectable modes of operation)		As installed	1	As installed	Sufficient to determine crew selection
43*	Selected heading (all pilot selectable modes of operation)		As installed	1	As installed	Sufficient to determine crew selection

Serial number	Parameter	Applicability	Measurement range	Maximum sampling and recording interval (seconds)	Accuracy limits (sensor input compared to FDR readout)	Recording resolution
44*	Selected flight path (all pilot selectable modes of operation)		As installed	1	As installed	Sufficient to determine crew selection
45*	Selected decision height		As installed	4	As installed	Sufficient to determine crew selection
46*	EFIS display format (pilot and co-pilot)		Discrete(s)	4	—	—
47*	Multi-function/ engine/alert display format		Discrete(s)	4	—	—
48*	Event marker		Discrete	1	—	—
49*	GPWS/TAWS/GCAS status (selection of terrain display mode including pop-up display status) and (terrain alerts, both cautions and warnings, and advisories) and (on/off switch position) and (operational status)	Application for type certification is submitted to a Contracting State on or after 1 January 2023	Discrete(s)	1	As installed	
50*	TCAS/ACAS (traffic alert and collision avoidance system) and (operational status)	Application for type certification is submitted to a Contracting State on or after 1 January 2023	Discrete(s)	1	As installed	
51*	Primary flight controls – pilot input forces	Application for type certification is submitted to a Contracting State on or after 1 January 2023	Full range	0.125 (0.0625 recommended)	± 3% unless higher accuracy is uniquely required	0.5% of operating range
52*	Computed centre of gravity	Application for type certification is submitted to a Contracting State on or after 1 January 2023	As installed	64	As installed	1% of full range
53*	Helicopter computed weight	Application for type certification is submitted to a Contracting State on or after 1 January 2023	As installed	64	As installed	1% of full range

Appendix 1 to OPS 3.710
Airbourne Image Recorder (AIR) and Airborne Image Recording System (AIRS)

(a) Start and Stop Logic

The AIR or AIRS shall start to record prior to the helicopter moving under its own power and record continuously until the termination of the flight when the helicopter is no longer capable of moving under its own power. In addition, depending on the availability of electrical power, the AIR or AIRS shall start to record as early as possible during the cockpit checks prior to engine start at the beginning of the flight until the cockpit checks immediately following engine shutdown at the end of the flight.

(b) Classes

(1) A Class A AIR or AIRS captures the general cockpit area in order to provide data supplemental to conventional flight recorders.

Note 1: To respect crew privacy, the cockpit area view may be designed as far as practical to exclude the head and shoulders of crew members whilst seated in their normal operating position.

Note 2: There are no provisions for Class A AIR or AIRS in this document.

(2) A Class B AIR or AIRS captures data link message displays.

(3) A Class C AIR or AIRS captures instruments and control panels.

Note: A Class C AIR or AIRS may be considered as a means for recording flight data where it is not practical or is prohibitively expensive to record on an FDR or an ADRS, or where an FDR is not required.

Appendix 2 to OPS 3.710
Parameter Characteristics for Aircraft Data Recording Systems (ADRS)

N°	Parameter name	Minimum recording range	Maximum recording interval in seconds	Minimum recording accuracy	Minimum recording resolution	Remarks
1	Heading:					
	a) Heading (Magnetic or True)	±180°	1	±2°	0.5°	*Heading is preferred, if not available, yaw rate shall be recorded
	b) Yaw rate	±300°/s	0.25	±1% + drift of 360°/h	2°/s	
2	Pitch:					
	a) Pitch attitude	±90°	0.25	±2°	0.5°	*Pitch attitude is preferred, if not available, pitch rate shall be recorded
	b) Pitch rate	±300°/s	0.25	±1% + drift of 360°/h	2°/s	
3	Roll:					
	a) Roll attitude	±180°	0.25	±2°	0.5°	*-Roll attitude is preferred, if not available, roll rate shall be recorded
	b) Roll rate	±300°/s	0.25	±1% + drift of 360°/h	2°/s	
4	Positioning system:					
	a) Time	24 hours	1	±0.5°	0.1°	UTC time preferred where available
	b) Latitude/longitude	Latitude:±90° Longitude:±180°	2 (1 if available)	As installed (0.00015° recommended)	0.00005°	
	c) Altitude	–300 m (–1 000 ft) to maximum certificated altitude of aircraft +1 500 m (5 000 ft)	2 (1 if available)	As installed (±15 m (±50 ft) recommended)	1.5 m (5 ft)	
	d) Ground speed	0–1 000 kt	2 (1 if available)	As installed (±5 kt recommended)	1 kt	
	e) Track	0–360°	2 (1 if available)	As installed (± 2° recommended)	0.5°	
	f) Estimated error	Available range	2 (1 if available)	As installed	As installed	Shall be recorded if readily available

N°	Parameter name	Minimum recording range	Maximum recording interval in seconds	Minimum recording accuracy	Minimum recording resolution	Remarks
5	Normal acceleration	−3 g to + 6 g	0.25 (0.125 if available)	As installed (±0.09 g excluding a datum error of ±0.05 g recommended)	0.004 g	
6	Longitudinal acceleration	±1 g	0.25 (0.125 if available)	As installed (±0.015 g excluding a datum error of ±0.05 g recommended)	0.004 g	
7	Lateral acceleration	±1 g	0.25 (0.125 if available)	As installed (±0.015 g excluding a datum error of ±0.05 g recommended)	0.004 g	
8	External static pressure (or pressure altitude)	34.4 hPa (1.02 in-Hg) to 310.2 hPa (9.16 in-Hg) or available sensor range	1	As installed (±1 hPa (0.3 in-Hg) or ±30 m (±100 ft) to ±210 m (±700 ft) recommended)	0.1 hPa (0.03 in-Hg) or 1.5 m (5 ft)	
9	Outside air temperature (or total air temperature)	−50° to +90°C or available sensor range	2	As installed (±2°C recommended)	1°C	
10	Indicated air speed	As the installed pilot display measuring system or available sensor range	1	As installed (±3% recommended)	1 kt (0.5 kt recommended)	
11	Main rotor speed (Nr)	50% to 130% or available sensor range	0.5	As installed	0.3% of full range	
12	Engine RPM (*)	Full range including overspeed condition	Each engine each second	As installed	0.2% of full range	*For piston-engined helicopters
13	Engine oil pressure	Full range	Each engine each second	As installed (5% of full range recommended)	2% of full range	
14	Engine oil temperature	Full range	Each engine each second	As installed (5% of full range recommended)	2% of full range	
15	Fuel flow or pressure	Full range	Each engine each second	As installed	2% of full range	
16	Manifold pressure (*)	Full range	Each engine each second	As installed	0.2% of full range	*For piston-engined helicopters

N°	Parameter name	Minimum recording range	Maximum recording interval in seconds	Minimum recording accuracy	Minimum recording resolution	Remarks
17	Engine thrust/power/ torque parameters required to determine propulsive thrust/power*	Full range	Each engine each second	As installed	0.1% of full range	*Sufficient parameters e.g. EPR/N1 or torque/Np as appropriate to the particular engine shall be recorded to determine power. A margin for possible overspeed should be provided. Only for turbine-engined helicopters.
18	Engine gas generator speed (Ng) (*)	0–150%	Each engine each second	As installed	0.2% of full range	*Only for turbine-engined helicopters
19	Free power turbine speed (Nf) (*)	0–150%	Each engine each second	As installed	0.2% of full range	*Only for turbine-engined helicopters
20	Collective pitch	Full range	0.5	As installed	0.1% of full range	
21	Coolant temperature (*)	Full range	1	As installed (±5°C recommended)	1° C	*Only for piston-engined helicopters
22	Main voltage	Full range	Each engine each second	As installed	1 Volt	
23	Cylinder head temperature (*)	Full range	Each cylinder each second	As installed	2% of full range	*Only for piston-engined helicopters
24	Fuel quantity	Full range	4	As installed	1% of full range	
25	Exhaust gas temperature	Full range	Each engine each second	As installed	2% of full range	
26	Emergency voltage	Full range	Each engine each second	As installed	1 Volt	
27	Trim surface position	Full range or each discrete position	1	As installed	0.3% of full range	
28	Landing gear position	Each discrete position*	Each gear every two seconds	As installed		*Where available, record up-and-locked and down-and-locked position
29	Novel/unique aircraft features	As required	As required	As required	As required	

Appendix 1 to OPS 3.775
Supplemental Oxygen for Non-pressurised Helicopters

Table 1

(a)	(b)
SUPPLY FOR:	**DURATION AND PRESSURE ALTITUDE**
1. All occupants of flight deck seats on flight deck duty	Entire flight time at pressure altitudes above 10000 ft.
2. All required cabin crew members	Entire flight time at pressure altitudes above 13000 ft and for any period exceeding 30 minutes at pressure altitudes above 10000 ft but not exceeding 13000 ft.
3. 100% of passengers (See Note)	Entire flight time at pressure altitudes above 13000 ft.
4. 10% of passengers (See Note)	Entire flight time after 30 minutes at pressure altitudes greater than 10000 ft but not exceeding 13000 ft.

Note: For the purpose of this table 'passengers' means passengers actually carried and includes infants under the age of 2.

Appendix 1 to OPS 3.830
Emergency Locator Transmitter (ELT(S))
(See OPS 3.380 and OPS 3.835)

All ELT(S) shall be capable of transmitting simultaneously on 121.5 MHz and 406 MHz, be coded in accordance with ICAO Annex 10 and be registered with the national agency responsible for initiating Search and Rescue, or another nominated agency.

SUBPART L

COMMUNICATION, NAVIGATION AND SURVEILLANCE EQUIPMENT

OPS 3.845 General Introduction

(See AMC OPS 3.845)

(a) The operator shall ensure that a flight does not commence unless the communication, navigation or surveillance equipment required under this Subpart is:

(1) Approved and installed in accordance with the requirements applicable to them, including the minimum performance standard and the operational and airworthiness requirements;

(2) Installed such that the failure of any single unit required for communication, navigation or surveillance purposes, or any combination thereof, will not result in the failure of another unit required for communication, navigation or surveillance purposes.

(3) In operable condition for the kind of operation being conducted except as provided in the MEL (OPS 3.030 refers); and

(4) So arranged that if equipment is to be used by one flight crew member at his station during flight it must be readily operable from his station. When a single item of equipment is required to be operated by more than one flight crew member it must be installed so that the equipment is readily operable from any station at which the equipment is required to be operated.

(b) Communication and navigation equipment minimum performance standards are those prescribed in the applicable Technical Standard Orders (TSO), unless different performance standards are prescribed in the operational or airworthiness codes. Communication and navigation equipment complying with design and performance specifications on the date of initial OPS 3 implementation may remain in service, or be installed, unless additional requirements are prescribed in this Subpart. Communication and navigation equipment which has already been approved does not need to comply with a revised TSO or a revised specification unless a retroactive requirement is prescribed.

OPS 3.850 Communication Equipment

(a) The operator shall not operate a helicopter unless it is equipped with radio required for the kind of operation being conducted.

(b) Where two independent (separate and complete) radio systems are required under this Subpart, each system must have an independent antenna installation except that, where rigidly supported non-wire antennae or other antenna installations of equivalent reliability are used, only one antenna is required.

(c) The radio communication equipment required to comply with paragraph (a) above must also provide for communications on the aeronautical emergency frequency 121·5 MHz.

(d) For flights in defined portions of airspace or on routes where an RCP type has been prescribed, a helicopter shall, in addition to the requirements specified in this Subpart:

(1) be provided with communication equipment which will enable it to operate in accordance with the prescribed RCP specification(s); and

(2) have information relevant to the helicopter RCP specification capabilities is listed in the flight manual or other helicopter documentation approved by the State of Design or Authority; and

(3) have information relevant to the helicopter RCP specification capabilities included in the MEL.

(e) The Authority, for operations where an RCP specification for PBC has been prescribed, ensure that the operator has established and documented:

(1) normal and abnormal procedures, including contingency procedures;

(2) flight crew qualification and proficiency requirements, in accordance with appropriate RCP specifications;

(3) a training programme for relevant personnel consistent with the intended operations; and

(4) appropriate maintenance procedures to ensure continued airworthiness, in accordance with appropriate RCP specifications.

(f) The Authority shall ensure that, in respect of those helicopters mentioned in sub-paragraph (d) above, adequate provisions exist for:

(1) receiving the reports of observed communication performance issued by monitoring programmes; and

(2) taking immediate corrective action for individual helicopters, helicopter types or operators, identified in such reports as not complying with the RCP specification.

OPS 3.855 Audio Selector Panel

The operator shall not operate a helicopter under IFR unless it is equipped with an audio selector panel accessible to each required flight crew member.

OPS 3.860 Radio Equipment for Operations under VFR over Routes Navigated by Reference to Visual Landmarks

The operator shall not operate a helicopter under VFR over routes that can be navigated by reference to visual landmarks, unless it is equipped with the radio equipment (communication and SSR transponder equipment) necessary under normal operating conditions to fulfil the following:

(a) Communicate with appropriate ground stations;

(b) Communicate with appropriate air traffic control facilities from any point in controlled airspace within which flights are intended;

(c) Receive meteorological information; and

(d) When mandated by airspace requirements, reply to SSR interrogations with a pressure-altitude reporting transponder which operates in accordance with ICAO Annex 10, Volume IV.

OPS 3.865 Communication and Navigation Equipment for Operations under IFR, or under VFR over Routes not Navigated by Reference to Visual Landmarks

(a) The operator shall not operate a helicopter under IFR, or under VFR over routes that cannot be navigated by reference to visual landmarks, unless the helicopter is equipped with radio (communication and SSR transponder) and navigation equipment in accordance with the requirements of air traffic services in the area(s) of operation.

(b) *Radio equipment.* The operator shall ensure that radio equipment comprises not less than:

(1) Two independent radio communication systems necessary under normal operating conditions to communicate with an appropriate ground station from any point on the route including diversions; and

(2) When mandated by airspace requirements, a pressure-altitude reporting transponder which operates in accordance with ICAO Annex 10, Volume IV.

(c) *Navigation equipment*. The operator shall ensure that the navigation equipment will enable it to proceed in accordance with its flight plan; and in accordance with the requirements of air traffic services; and

(1) Comprises not less than:

(i) Two independent navigation aids appropriate to the route/area to be flown;

(ii) An approach aid suitable for the destination and alternate heliports;

(iii) An Area Navigation System when area navigation is required for the route/area being flown;

(iv) Two VOR receiving systems on any route, or part thereof, where navigation is based only on VOR signals; and

(v) Two ADF systems on any route, or part thereof, where navigation is based only on NDB signals, or

(2) For operations where a navigation specification for performance-based navigation (PBN) has been prescribed, a helicopter shall, in addition to requirements specified in this Subpart;

(i) be provided with navigation equipment which will enable it to operate in accordance with the prescribed navigation specification(s); and

(ii) have information relevant to the helicopter navigation specification capabilities is listed in the flight manual or other helicopter documentation approved by the State of Design or Authority; and

(iii) have information relevant to the helicopter navigation specification capabilities included in the MEL.

(See also AMC OPS 3.243).

(3) On flights in which it is intended to land in instrument meteorological conditions, a helicopter shall be provided with appropriate navigation equipment providing guidance to a point from which a visual landing can be effected. This equipment shall be capable of providing such guidance at each heliport at which it is intended to land in instrument meteorological conditions and at any designated alternate heliports.

(d) The Authority shall, for operations where a navigation specification for PBN has been prescribed, ensure that the operator has established and documented:

(1) normal and abnormal procedures, including contingency procedures;

(2) flight crew qualification and proficiency requirements, in accordance with appropriate navigation specifications;

(3) a training programme for relevant personnel consistent with the intended operations; and

(4) appropriate maintenance procedures to ensure continued airworthiness, in accordance with appropriate navigation specifications.

(e) The Authority shall issue a specific approval for operations based on PBN authorisation required (AR) navigation specifications.

(f) The operator may operate a helicopter that is not equipped with the navigation equipment specified in sub-paragraph(s) (c)(1)(iv) and/or (c)(1)(v) above, provided that it is equipped with alternative equipment authorised for the route/area being flown by the Authority. The reliability and the accuracy of alternative equipment must allow safe navigation for the intended route.

(g) When operating in regional airspace requiring FM immunity performance standards, the operator shall ensure that VHF communication equipment, ILS Localiser and VOR receivers installed on helicopters to be operated under IFR are of a type that has been approved as complying with the FM immunity performance standards (see AC OPS 3.865(e)).

(h) Where not more than one item of equipment specified in (a) above is unserviceable when the helicopter is about to begin a flight, the helicopter may nevertheless take-off on that flight if:

(1) It is not reasonably practical to repair or replace that item, before the commencement of the flight;

(2) The helicopter has not made more than one flight since the item was found to be unserviceable; and

(3) The commander has satisfied himself that, taking into account the latest information available as to the route/area and heliport to be used (including any planned diversion) and the weather conditions likely to be encountered, the flight can be made safely and in accordance with any relevant requirements of the appropriate air traffic control limit.

OPS 3.867 Surveillance Equipment

(a) A helicopter shall be provided with surveillance equipment which will enable it to operate in accordance with the requirements of air traffic services.

(b) For operations where surveillance equipment is required to meet an RSP specification for performance-based surveillance (PBS), a helicopter shall, in addition to the requirements specified in sub-paragraph (a);

(1) be provided with surveillance equipment which will enable it to operate in accordance with the prescribed RSP specification(s);

(2) have information relevant to the helicopter RSP specification capabilities listed in the flight manual or other helicopter documentation approved by the State of Design or Authority; and

(3) have information relevant to the helicopter RSP specification capabilities included in the MEL.

(c) The Authority shall, for operations where an RSP specification for PBS has been prescribed, ensure that the operator has established and documented;

(1) normal and abnormal procedures, including contingency procedures;

(2) flight crew qualification and proficiency requirements, in accordance with appropriate RSP specifications;

(3) a training programme for relevant personnel consistent with the intended operations; and

(4) appropriate maintenance procedures to ensure continued airworthiness, in accordance with appropriate RSP specifications.

(d) The Authority shall ensure that, in respect of those helicopters mentioned in sub-paragraph (b), adequate provisions exist for;

(1) receiving the reports of observed surveillance performance issued by monitoring programmes; and

(2) taking immediate corrective action for individual helicopter, helicopter types or operators, identified in such reports as not complying with the RSP specification.

OPS 3.873 Electronic Navigation Data Management

(a) The operator shall not use a navigation database which supports an airborne navigation application as a primary means of navigation unless the navigation database supplier holds a Type 2 Letter of Acceptance (LoA) or equivalent.

(b) If the operator's supplier does not hold a Type 2 LoA or equivalent, the operator shall not use the electronic navigation data products unless the Authority has approved the operator's procedures for ensuring that the process applied and the delivered products have met equivalent standards of integrity.

(c) The operator shall not use electronic navigation data products for other navigation applications unless the Authority has approved the operator's procedures for ensuring that the process applied and the delivered products have met acceptable standards of integrity and that the products are compatible with the intended function of the equipment that will use them.

(d) The operator shall continue to monitor both the process and the products according to the requirements of OPS 3.035.

(e) The operator shall implement procedures that ensure timely distribution and insertion of current and unaltered electronic navigation data to all aircraft that require it.

SUBPART M

HELICOPTER CONTINUING AIRWORTHINESS

OPS 3.875 General

(See AMC OPS 3.875)

(a) Operators shall ensure that, in accordance with CAR GEN and this Subpart;

(1) each helicopter they operate is maintained in an airworthy condition;

(2) the operational and emergency equipment necessary for an intended flight is serviceable; and

(3) the certificate of airworthiness of each helicopter they operate remains valid.

(b) Where reference is made to CAR 145 this includes those maintenance organisations accepted by the Authority in accordance with CAR GEN.010(a).

(c) The operator shall not operate a helicopter unless maintenance on the helicopter, including any associated engine, rotor and part is carried out, and released to service by an organisation appropriately approved/accepted in accordance with CAR 145 except that pre-flight inspections need not necessarily be carried out by the CAR 145 organisation.

(d) This Subpart prescribes helicopter maintenance and continuing airworthiness requirements needed to comply with the operator certification requirements in OPS 3.180.

OPS 3.880 Terminology

The following definitions shall apply to this Subpart:

(a) *Pre-flight inspection* – means the inspection carried out before flight to ensure that the helicopter is fit for the intended flight. It does not include defect rectification.

(b) *Approved standard* – means a manufacturing/design/maintenance/quality standard approved by the Authority.

(c) *Approved by the Authority* – means approved by the Authority directly or in accordance with a procedure approved by the Authority.

(d) *Continuing airworthiness* – means the set of processes by which an aircraft, engine, rotor or part complies with the applicable airworthiness requirements and remains in a condition for safe operation throughout its operating life.

(e) *Continuing airworthiness records* – means records which are related to the continuing airworthiness status of an aircraft, engine, rotor or associated part.

OPS 3.885 Application for and Approval of the Operator's Maintenance System

(a) For the approval of the maintenance system, an applicant for the initial issue and variation of an AOC shall submit the documents specified in OPS 3.185(b). (See AMC OPS 3.885(a))

(b) An applicant for the initial issue and variation of an AOC shall meet the requirements of this Subpart, in conjunction with an appropriate maintenance management exposition, as a minimum for the maintenance system to be approved by the Authority. (See AMC OPS 3.885(b))

OPS 3.890 Maintenance Responsibility
(See Appendix 1 to OPS 3.890)

(a) The operator shall ensure the airworthiness of the helicopter and the serviceability of both operational and emergency equipment by (See AMC OPS 3.890(a)):

(1) The accomplishment of pre-flight inspections (See AMC OPS 3.890(a)(1));

(2) The rectification to an approved standard of any defect and damage affecting safe operation, taking into account the minimum equipment list and configuration deviation list if available for the helicopter type (See AMC OPS 3.890(a)(2));

(3) The accomplishment of all maintenance in accordance with the approved operator's helicopter maintenance programme specified in OPS 3.910 (See AMC OPS 3.890(a)(3));

(4) The analysis of the effectiveness of the operator's approved helicopter maintenance programme (See AMC OPS 3.890(a)(4));

(5) The accomplishment of any operational directive, airworthiness directive and any other continued airworthiness requirement made mandatory by the Authority. (See AMC OPS 3.890(a)(5));

(6) The accomplishment of modifications in accordance with CAR 21, Subpart C and, for non-mandatory modifications, the establishment of an embodiment policy. (See AMC OPS 3.890(a)(6))

(7) Ensuring only materials, parts, components and appliances that conform with CAR 21, Subpart K are installed on the aircraft;

(8) Ensuring maintenance records produced by the contracted maintenance organisations are in the English language.

(b) The operator shall ensure that the Certificate of Airworthiness for each helicopter operated remains valid in respect of:

(1) The requirements in sub-paragraph (a) above;

(2) Any calendar expiry date specified in the certificate;

(3) Any other maintenance condition specified in the certificate;

(4) The requirements specified in subparagraph (a) above must be performed in accordance with procedures acceptable to the Authority; and

(5) Where applicable, conducting an Airworthiness Review in accordance with an approved procedure in the MME in support of a Certificate of Airworthiness that has a 24 month periodicity (see Appendix 1 to OPS 3.890).

(c) [The airworthiness directives applicable under these regulations are those airworthiness directives or equivalent mandatory continued airworthiness requirements defined in CAR GEN.061.]

(d) Compliance with alternative or additional airworthiness directives may be required as a condition of issue or continuity of the Type Acceptance Certificate.

OPS 3.895 Maintenance Management

(a) The operator must be appropriately approved in accordance with CAR 145 to perform the maintenance as specified in OPS 3.890(a)(2), (3), (5) and (6) except when the Authority is satisfied that the maintenance can be contracted to an appropriate CAR 145 approved organisation, or to an organisation accepted in accordance with CAR GEN.010(a). Helicopter base and scheduled line maintenance and engine maintenance contracts, together with all amendments, must be acceptable to the Authority. The Authority does not require the commercial elements of a maintenance contract. (See AMC OPS 3.895(a))

(b) The operator must employ a person or group of persons acceptable to the Authority to ensure that all maintenance and continuing airworthiness functions are carried out on time to an approved standard such that the maintenance responsibility requirements prescribed in OPS 3.890 are satisfied. The person, or senior person as appropriate, is the nominated postholder referred to in OPS 3.175(i)(2). The nominated postholder for continuing airworthiness is also responsible for any corrective action resulting from the quality monitoring of OPS 3.900(a). (See AMC OPS 3.895(b))

(c) The Nominated Postholder for continuing airworthiness should not be employed by an approved/accepted organisation under contract to the operator, unless specifically agreed by the Authority. (See AMC OPS 3.895(c)).

(d) When the operator does not employ sufficient qualified, competent people to carry out the continuing airworthiness requirements specified in OPS 3.890(a)(2), (3), (5) and (6), arrangements must be made with an organisation acceptable to the Authority to carry out these requirements. Except as otherwise specified in paragraphs (e), (f) and (g) below, the arrangement must be in the form of a written contract between the operator and the organisation accepted by the Authority detailing the functions specified in OPS 3.890(a)(2), (3), (5) and (6) and defining the support of the quality functions of OPS 3.900. (See AMC OPS 3.895(d))

(e) Notwithstanding paragraph (d) above, the operator may have a contract with an organisation, provided that;

(1) for helicopter or engine continuing airworthiness contracts, the contracted organisation is a CAR OPS 3 operator of the same type of helicopter, or an organisation acceptable to the Authority,

(2) all maintenance is ultimately performed by a CAR 145 approved organisation or an organisation accepted in accordance with CAR GEN.010(a);

(3) such a contract details the functions specified in OPS 3.890(a)(2), (3), (5) and (6) and defines the support of the quality functions of OPS 3.900,

(4) the contract, together with all amendments, is acceptable to the Authority. The Authority does not require the commercial elements of a maintenance contract. (See AMC OPS 3.895(e))

(f) Notwithstanding paragraph (a) above, in the case of a helicopter needing occasional line maintenance, the contract may be in the form of individual work orders to the Maintenance Organisation. (See AMC OPS 3.895(f & g))

(g) Notwithstanding paragraph (a) above, in the case of helicopter component maintenance, including engine maintenance, the contract may be in the form of individual work orders to the Maintenance Organisation. (See AMC OPS 3.895(f & g))

(h) The operator must provide suitable office accommodation at appropriate locations for the personnel specified in sub-paragraph (b) above. (See AMC OPS 3.895(h)).

(i) The operator shall ensure that all personnel assigned to, or directly involved in, continuing airworthiness and Quality Assurance functions are properly trained, have demonstrated their abilities in their particular duties and are aware of their responsibilities and the relationship of such duties to the operation as a whole in accordance with a procedure acceptable to the Authority.

OPS 3.900 Quality System
(See AMC OPS 3.900)
(See AMC OPS 3.900)

(a) For maintenance purposes, the operator's Quality System, as required by OPS 3.035, must additionally include at least the following functions:

(1) Monitoring that the activities of OPS 3.890 are being performed in accordance with the accepted procedures;

(2) Monitoring that all contracted maintenance and continuing airworthiness tasks are carried out in accordance with the contract; and

(3) Monitoring the continued compliance with the requirements of this Subpart.

(b) Where the operator is approved in accordance with CAR 145, the Quality System may be combined with that required by CAR 145.

OPS 3.905 Operator's Maintenance Management Exposition
(See Appendix 1 to AMC OPS 3.905(a)

(a) The operator shall provide, for the use and guidance of maintenance and operational personnel concerned, a Maintenance Management Exposition, the design of the manual shall observe Human Factors principles.

(b) The operator shall ensure that the Maintenance Management Exposition;

(1) is amended as necessary to keep the information contained therein up to date.

(2) amendments are furnished promptly to all organizations or persons to whom the manual has been issued.

(3) is provided to the Authority, together with all amendments and/or revisions to it and the operator shall incorporate in it such mandatory material as the Authority may require.

(c) An operator must provide an operator's Maintenance Management Exposition containing details of the organisation structure (See AMC OPS 3.905(a)) including:

(1) The nominated postholder responsible for the maintenance system required by OPS 3.175(i)(2) and the person, or group of persons, referred to in OPS 3.895(b);

(2) The procedures that must be followed to satisfy the maintenance responsibility of OPS 3.890 and the quality functions of OPS 3.900, except that where the operator is appropriately approved as a maintenance organisation in accordance with CAR 145, such details may be included in the CAR 145 exposition.

(d) The operator's maintenance management exposition shall contain a description of the methods used for the completion and retention of the operator's continuing airworthiness records required by OPS 3.920.

(e) An operator's maintenance management exposition and any subsequent amendment must be approved by the Authority.

OPS 3.910 Operator's Helicopter Maintenance Programme

(a) The operator must ensure that the helicopter is maintained in accordance with the approved helicopter maintenance programme. The maintenance programme must contain details, including frequency, of all maintenance required to be carried out. The maintenance programme will be required to include a reliability programme when the Authority determines that such a reliability programme is necessary. (See AMC OPS 3.910(a))

(b) The operator shall provide, for the use and guidance of maintenance and operational personnel concerned, a maintenance programme, approved by the Authority, containing the following information;

(1) maintenance tasks and the intervals at which these are to be performed, taking into account the anticipated utilisation of the helicopter;

(2) when applicable, a continuing structural integrity programme;

(3) procedures for changing or deviating from (1) and (2) above; and

(4) when applicable, condition monitoring and reliability programme descriptions for helicopter systems, components, power transmissions, rotors and engines.

(d) Maintenance tasks and intervals that have been specified as mandatory in approval of the type design shall be identified as such.

(d) The design and application of the operator's maintenance programme shall observe Human Factors principles.

(e) Copies of all amendments to the maintenance programme shall be furnished promptly to all organizations or persons to whom the maintenance programme has been issued.

(f) The operator's approved helicopter maintenance programme must be subject to periodic reviews and amended when necessary. The reviews will ensure that the maintenance programme continues to be valid in light of operating experience whilst taking into account new and/or modified maintenance instructions promulgated by the Type Certificate holder. (See AMC OPS 3.910(f))

(g) The operator's approved helicopter maintenance programme must reflect applicable mandatory regulatory requirements addressed in documents issued by the Authority and Type Certificate holder to comply with aircraft certification requirements. (See AMC OPS 3.910(g))**.**

(h) The operator's helicopter maintenance programme and any subsequent amendment must be approved by the Authority, as the State of Registry. (See AMC OPS 3.910(h)).

(i) The periods prescribed by the Authority's approved maintenance programme may be varied by the operator provided that such variations are within the limits specified in OPS 3.910 (j). Variations are only permitted when the periods prescribed by the maintenance programme, or documents in support of the maintenance programme, cannot be complied with due to circumstances which could not reasonably have been foreseen by the operator. Particulars of every variation so made shall be entered in the appropriate aircraft records.

(j) The permitted variations to the maintenance programme in accordance with OPS 3.910(i) are;

(1) Items Controlled by Flying Hours:

- 5000 flying hours or less;	10%
- More than 5000 flying hours;	500 flying hours

(2) Items Controlled by Calendar Time:

- 1 year or less:	10% or 1 month, whichever is the lesser
- More than 1 year but not exceeding 3 years:	2 months
- More than 3 years:	3 months

(3) Items Controlled by Landing/Cycles:

- 500 landings/cycles or less:	10% or 25 landings/cycles, whichever is the lesser
- More than 500 landings/cycles:	10% or 500 landings/cycles, whichever is the lesser

OPS 3.915 Helicopter Technical Log
(See AMC OPS 3.915)

(a) The operator must use a helicopter technical log system containing the following information for each helicopter:

(1) the name of the operator;

(2) the registration and designation of the aircraft;

(3) record of aircraft utilisation including total time (daily, hours, cycles sectors) as applicable including those cycles, such as landings, pressure cycles, engine power ranges, which affect the life of an aircraft or component;

(4) records of ground de-icing/anti-icing, including duration and type of fluid applied;

(5) records of fuel and oil;

(6) the maintenance status of the aircraft, the identity of the next scheduled inspection, including date/hours/cycles at which any other out of phase maintenance/inspection is required;

(7) any defects or abnormal occurrences found by the pilot during or following a flight; and details of rectification of defects occurring between scheduled inspections including the certificate of release to service for any rectification;

(8) details of any deferred rectification including any inoperative equipment with which the aircraft is permitted to be flown under the applicable CARs relating to the operation of the aircraft;

(9) records for special operations such as AWOPs;

(10) the information required by the applicable CARs relating to the operation of the aircraft;

(11) Any necessary maintenance support information for the pilot; and

(12) the pre-flight inspection signature.

(b) The content of the technical log may be altered from that in this regulation if alternative methods of recording this data acceptable to the Authority are used.

(c) The technical log shall be kept in hard copy form or in electronic coded form provided that this form allows for the preservation and retrieval of information.

(d) The helicopter technical log system and any subsequent amendment must be approved by the Authority.

OPS 3.920 Continuing Airworthiness Records
(See AMC OPS 3.920)

(a) The operator shall ensure that the helicopter technical log is retained for 24 months after the date of the last entry.

(b) The operator shall ensure that a system has been established to keep, in a form and format that ensures readability, security and integrity of the records at all times and is acceptable to the Authority.

Note: The form and format of the records may include, for example, paper records, film records, electronic records or any combination thereof.

(c) The continuing airworthiness records shall be retained for the periods specified in CAR GEN.058.

(d) In the event of a temporary change of operator, the records shall be made available to the new operator. In the event of any permanent change of operator, the records shall be transferred to the new operator. (See AMC OPS 3.920(c))

OPS 3.930 Continued Validity of the Air Operator Certificate in Respect of the Maintenance System
(See AMC OPS 3.930)

The operator must comply with OPS 3.175 and OPS 3.180 to ensure continued validity of the air operator certificate in respect of the maintenance system.

OPS 3.935 Equivalent Safety Case
(See AMC OPS 3.935)

The operator shall not introduce alternative procedures to those prescribed in this Subpart unless needed and an equivalent safety case has first been approved by the Authority.

OPS 3.937 Continuing Airworthiness

(a) The operator of a helicopter over 3175 kg maximum certificated take-off mass shall monitor and assess maintenance and operational experience with respect to continuing airworthiness and provide the information as prescribed by the Authority and report through the system specified in CAR GEN.205(f) and (g).

(b) The operator of a helicopter over 3175 kg maximum certificated take-off mass shall obtain and assess continuing airworthiness information and recommendations available from the organization responsible for the type design and shall implement resulting actions considered necessary in accordance with a procedure acceptable to the Authority.

Appendix 1 to OPS 3.890
Airworthiness Review in Support of a C of A with a 24 Month Validity

(a) The certificate of airworthiness of a helicopter operating in accordance with CAR OPS 3 shall have a 12 month period of validity. The validity may be extended to 24 months by the Authority provided the operator receives an "Operators Maintenance System Approval" for Airworthiness Reviews.

(b) Helicopters that may have their certificate of airworthiness validity extended to a 24 month period of validity shall meet the following criteria;

(1) the helicopter shall have been operating commercially for at least 12 months with that operator.

(2) The Airworthiness Review shall be conducted prior to the expiry of 12 months from the date of issue of the certificate of airworthiness.

(3) The Airworthiness Review may be conducted within 60 days before expiry of 12 months without affecting the renewal date of the C of A.

(4) The Airworthiness Review shall be documented in a format acceptable to the Authority and a copy shall be carried on board the aircraft with the current C of A.

(5) A copy of the Airworthiness Review documentation shall be submitted to the Authority within 10 days of completion.

(6) The Airworthiness Review shall include the confirmation of continuing compliance with the following items as a minimum;

(i) airworthiness Directives up to the latest published issue;

(ii) Authority accepted Type Certificate Data Sheet;

(iii) Maintenance Programme at the latest issue approved by the Authority;

(iv) component service life limits;

(v) airworthiness limitations;

(vi) that the aircraft has been weighed in the previous five years and a there is a valid weight and centre of gravity schedule reflecting the current configuration of the aircraft;

(vii) all embodied modifications and repairs have been accepted or approved by the Authority;

(viii) all defects have been corrected or deferred in accordance with the MEL;

(ix) the current Flight Manual including applicable supplements are complete and up to date and reflect the current configuration of the aircraft;

(x) applicable operational requirements as applicable to this aircraft;

(xi) navigational software latest updates; and

(xii) control of further, or repeat tasks, associated with non-permanent repairs to the aircraft, engines or components

(7) The operator shall record what supporting data was reviewed to confirm compliance with the items in paragraph (b)(6) above. This record shall be placed in the continuing airworthiness records for the aircraft together with a copy of the completed and signed documentation.

(c) The operator shall produce additional procedures to be included in the Maintenance Management Exposition (MME). (See Appendix 1 to AMC OPS 3.905(a)).

(d) The MME shall;

(1) be submitted for Authority acceptance; and

(2) clearly describe the nominated postholder(s)' authorisation and responsibilities for conducting an Airworthiness Review.

(e) The nominated postholder shall demonstrate the necessary competencies to undertake an Airworthiness Review.

SUBPART N

FLIGHT CREW

OPS 3.940 Composition of Flight Crew

(a) The operator shall ensure that;

(1) the number and composition of the flight crew shall not be less than that specified in the operations manual.

(2) the flight crews shall include flight crew members in addition to the minimum numbers specified in the Helicopter Flight Manual or other documents associated with the certificate of airworthiness, when necessitated by considerations related to the type of helicopter used, the type of operation involved and the duration of flight between points where flight crews are changed.

(3) the flight crew shall include at least one member authorised by the Authority, as State of Registry, to operate the type of radio transmitting equipment to be used.

(4) for each type of helicopter, all flight crew members are assigned the necessary functions they are to perform in an emergency or in a situation requiring emergency evacuation. Annual training in accomplishing these functions shall be contained in the operator's training programme and shall include instruction in the use of all emergency and life-saving equipment required to be carried, and drills in the emergency evacuation of the helicopter.

(5) All flight crew members hold an applicable and valid licence acceptable to the Authority and are suitably qualified and competent to conduct the duties assigned to them;

(6) Procedures are established, acceptable to the Authority, to prevent the crewing together of inexperienced flight crew members; (See AMC OPS 3.940(a)(4));

(7) One pilot amongst the flight crew is designated as the commander who may delegate the conduct of the flight to another suitably qualified pilot.

(8) When engaging the services of flight crew members who are self-employed and/or working on a freelance or part-time basis, the requirements of Subpart N are complied with.

(9) For crew members serving the operator as a commander, initial operator's Crew Resource Management (CRM) training shall be completed before commencing unsupervised line flying.

(b) *Pilots*. The operator shall ensure that:

(1) Commanders and co-pilots on an IFR flight hold a valid instrument rating, except that the holder of a pilot licence may fly in VMC at night, provided he is appropriately qualified for the circumstances, airspace and flight conditions in which the flight is conducted. This qualification requirement must be entered in the Operations Manual and be acceptable to the Authority. (See AMC OPS 3.940(b)(1)).

(2) For IFR operations using helicopters with a maximum approved passenger seating configuration (MAPSC) of more than 9:

(i) The minimum flight crew is two qualified pilots; and

(ii) The commander holds a valid Airline Transport Pilot's Licence (Helicopter) (ATPL(H));

(3) For operations using helicopters with a maximum approved passenger seating configuration (MAPSC) of more than 19:

(i) The minimum flight crew is two qualified pilots;

(ii) The commander holds a valid Airline Transport Pilot's Licence (Helicopter) (ATPL(H)).

(c) Helicopters not covered by sub-paragraph (b)(2) and (b)(3) above may be operated by a single pilot provided that the requirements of Appendix 1 to OPS 3.940(c) are satisfied.

OPS 3.941 Training - General

The operator shall establish and maintain a ground and flight training programme, approved by the Authority in accordance with this Subpart, which ensures that all flight crew members are adequately trained to perform their assigned duties. The training programme shall:

(a) include ground and flight training facilities and properly qualified instructors as determined by the Authority;

(b) consist of ground and flight training for the type(s) of helicopter on which the flight crew member serves;

(c) include proper flight crew coordination and training for all types of emergency and abnormal situations or procedures caused by engine, transmission, rotor, airframe or systems malfunctions, fire or other abnormalities;

(d) include training in knowledge and skills related to the visual and instrument flight procedures for the intended area of operation, human performance and threat and error management, the transport of dangerous goods and, where applicable, procedures specific to the environment in which the helicopter is to be operated;

(e) ensure that all flight crew members know the functions for which they are responsible and the relation of these functions to the functions of other crew members, particularly in regard to abnormal or emergency procedures;

(f) shall include training in knowledge and skills related to the operational use of head-up display and/or enhanced vision systems for those helicopters so equipped; and

(g) be given on a recurrent basis, as determined by the Authority and shall include an assessment of competence.

OPS 3.943 Initial Operator's Crew Resource Management (CRM) Training
(See AC No. 1 to OPS 3.943)
(See AC No. 2 to OPS 3.943)

(a) When a flight crew member has not previously completed initial Operator's Crew Resource Management (CRM) training (either new employees or existing staff), then the operator shall ensure that the flight crew member completes an initial CRM training course. New employees shall complete initial Operator's CRM Training within their first year of joining the operator.

(b) Initial CRM training shall be conducted by suitably qualified personnel (See AC-1 OPS 3.943).

(c) Initial CRM training is conducted in accordance with a detailed course syllabus included in the Operations Manual, and shall contain at least the following items:

(1) Human error and reliability, error chain, error prevention and detection;

(2) Company safety culture, Standard Operating Procedures (SOPs), organisational factors;

(3) Stress, stress management, fatigue and vigilance;

(4) Information acquisition and processing, situation awareness, workload management;

(5) Decision making;

(6) Communication and co-ordination inside and outside the cockpit;

(7) Leadership and team behaviour, synergy;

(8) Automation and philosophy of the use of automation (if relevant to the type);

(9) Specific type-related differences;

(10) Case based studies;

(11) Additional areas which warrant extra attention, as identified by the safety management system (see OPS 3.037).

OPS 3.945 Conversion Training and Checking
(See AMC OPS 3.945)
(See AMC OPS 3.945)
(See AC No. 1 to OPS 3.943)
(See AC No. 2 to OPS 3.943)

(a) The operator shall ensure that:

(1) A flight crew member completes a Type Rating course which satisfies the applicable requirements when changing from one type of helicopter to another type for which a new type rating is required;

(2) A flight crew member completes the operator's conversion course before commencing unsupervised line flying;

(i) When changing to a helicopter for which a new type rating is required; or

(ii) When changing operator;

(3) Conversion training is conducted by suitably qualified persons in accordance with a detailed course syllabus included in the Operations Manual.

(4) The amount of training required by the operator's conversion course is determined after due note has been taken of the flight crew member's previous training as recorded in his training records prescribed in OPS 3.985;

(5) The minimum standards of qualification and experience required of flight crew members before undertaking conversion training are specified in the Operations Manual;

(6) Each flight crew member undergoes the checks required by OPS 3.965(b) and the training and checks required by OPS 3.965(d) before commencing line flying under supervision;

(7) Upon completion of line flying under supervision, the check required by OPS 3.965(c) is undertaken;

(8) Once the operator's conversion course has been commenced, a flight crew member does not undertake flying duties on another type until the course is completed or terminated unless otherwise approved by the Authority (See AMC OPS 3.945(a)(8)); and

(9) Elements of CRM training are integrated into the conversion course. (See AC-1 OPS 3.943 and AC-2 OPS 3.943 and AC OPS 3.945(a)(9) and AMC OPS 3.945(a)(8)).

(b) In the case of changing helicopter type, the check required by 3.965(b) may be combined with the type rating skill test required.

(c) The operator's conversion course and the Type Rating course required may be combined.

OPS 3.950 Differences Training and Familiarisation Training

(a) The operator shall ensure that a flight crew member completes:

(1) Differences training which requires additional knowledge and training on an appropriate training device:

(i) When operating a variant of a helicopter currently operated; or

(ii) When introducing a significant change of equipment and/or procedures on types or variants currently operated.

(2) Familiarisation training which requires the acquisition of additional knowledge:

(i) When operating another helicopter of the same type; or

(ii) When introducing a significant change of equipment and/or procedures on types or variants currently operated.

(b) The operator shall specify in the Operations Manual when such differences training or familiarisation training is required.

OPS 3.955 Upgrade to Commander
(See Appendix 1 to OPS 3.955)

(a) A pilot upgrading to commander shall complete an appropriate command course.

(b) The operator shall specify in the Operations Manual a minimum experience level for upgrade to commander from within the company and for those joining as direct entry commanders.

OPS 3.960 Commanders - Minimum Qualification Requirements

(a) The minimum qualification requirements for a commander are either:

(1) An Airline Transport Pilot Licence (Helicopter) (ATPL(H)); or

(2) A Commercial Pilot's Licence (Helicopter) (CPL(H) provided that:

(i) When conducting operations under instrument flight rules (IFR), the Commander has a minimum of 700 hours total flight time on helicopters which includes 300 hours as pilot-in-command and 100 hours under IFR. The 300 hours as pilot-in-command may be substituted by co-pilot hours on a 2 for 1 basis provided those hours were gained within an established two pilot crew concept system described in the Operations Manual;

(ii) When conducting operations under visual meteorological conditions (VMC) at night, a commander, without a valid instrument rating, has 300 hours total flight time on helicopters which includes 100 hours as pilot-in-command and 10 hours at night as pilot flying.

OPS 3.965 Recurrent Training and Checking
(See Appendix 1 to OPS 3.965)
(See AC No. 1 to OPS 3.943)
(See AC No. 2 to OPS 3.943)
(See AMC OPS 3.965)
(See AMC Appendix 1 to OPS 3.965)

(a) *General* - The operator shall ensure that:

(1) Each flight crew member undergoes recurrent training and checking and that all such training and checking is relevant to the type or variant of helicopter on which the crew member is certificated to operate;

(2) A recurrent training and checking programme is established in the Operations Manual and approved by the Authority;

(3) Recurrent training is conducted by the following personnel:

(i) *Ground and refresher training* - by a suitably qualified person;

(ii) *Helicopter/flight simulator training* - by a Type Rating Instructor (TRI), or in the case of the flight simulator, a Synthetic Flight Instructor (SFI), provided that the TRI or SFI satisfies the operator's experience and knowledge requirements sufficient to instruct on the items specified in paragraphs (a)(1)(i)(A) and (B) of Appendix to OPS 3.965;

(iii) *Emergency and safety equipment training and checking* - by suitably qualified personnel; and

(iv) *Crew Resource Management (CRM) training* - by suitably qualified personnel.

(4) Recurrent checking is conducted by the following personnel:

(i) *Operator proficiency checks* - by a Type Rating Examiner (TRE) or a Flight Examiner (FE) with the appropriate type rating, nominated by the operator and acceptable to the Authority or, a Synthetic Flight Examiner (SFE) if the check is conducted in a flight simulator approved for the purpose; and

(ii) *Line checks* - by suitably qualified commanders trained in the assessment of CRM skills (see AC-2 OPS 3.943 paragraph 4) nominated by the operator and acceptable to the Authority;

(5) Each flight crew member undergoes operator proficiency checks as part of a normal flight crew complement.

(b) *Operator Proficiency Check*

(1) The operator shall ensure that:

(i) Each flight crew member undergoes operator proficiency checks to demonstrate his competence in carrying out normal, abnormal and emergency procedures; and

(ii) The check must be conducted without external visual references, as appropriate, when it is likely that the crew member will be required to operate under IFR.

(2) Except as stated in (3) below, the period of validity of the operator proficiency check shall be 6 calendar months in addition to the remainder of the month of issue. If issued within the final 2 calendar months of validity of a previous operator proficiency check, the period of validity shall extend from the date of issue until 6 calendar months from the expiry date of that previous operator proficiency check. Before a flight crew member, without a valid instrument rating, may operate VMC at night he will be required to undergo a proficiency check at night. Thereafter, each second proficiency check shall then be conducted at night.

(3) The period of validity of the operator proficiency check for private helicopters below a maximum certificated take-off mass of 5700 kg, shall be 12 calendar months in addition to the remainder of the month of issue. If issued within the final 2 calendar months of validity of a previous operator proficiency check, the period of validity shall extend from the date of issue until 12 calendar months from the expiry date of that previous operator proficiency check.

(c) *Line Check*. The operator shall ensure that each flight crew member undergoes a line check on the helicopter to demonstrate his competence in carrying out normal line operations described in the Operations Manual. The period of validity of a line check shall be 12 calendar months, in addition to the remainder of the month of issue. If issued within the final 2 calendar months of validity of a previous line check the period of validity shall extend from the date of issue until 12 calendar months from the expiry date of that previous line check.

(d) *Emergency and Safety Equipment training and checking*. The operator shall ensure that each flight crew member undergoes training and checking on the location and use of all emergency and safety equipment carried. The period of validity of an emergency and safety equipment check shall be 12 calendar months in addition to the remainder of the month of issue. If issued within the final 2 calendar months of validity of a previous emergency and safety check, the period of validity shall extend from the date of issue until 12 calendar months from the expiry date of that previous emergency and safety equipment check.

(e) *CRM.* The operator shall ensure that;

(1) Elements of CRM are integrated into all appropriate phases of the recurrent training; and

(2) Each flight crew member undergoes specific modular CRM training. All major topics of the initial CRM training shall be covered over a period not exceeding 3 years.

(f) *Ground and Refresher training*. The operator shall ensure that each flight crew member undergoes ground and refresher training at least every 12 calendar months. If the training is conducted within 2 calendar months prior to the expiry of the 12 calendar months period, the next ground and refresher training must be completed within 12 calendar months of the original expiry date of the previous ground and refresher training.

(g) *Helicopter/flight simulator training.* The operator shall ensure that each flight crew member undergoes helicopter/flight simulator training at least every 12 calendar months. If the training is conducted within 2 calendar months prior to the expiry of the 12 calendar months period, the next helicopter/flight simulator training must be completed within 12 calendar months of the original expiry date of the previous ground and refresher training.

OPS 3.968 Pilot Qualification to Operate in Either Pilot's Seat
(See Appendix 1 to OPS 3.968)
(See AMC OPS 3.965)
(See AMC Appendix 1 to OPS 3.965)

(a) The operator shall ensure that:

(1) A pilot who may be assigned to operate in either pilot's seat completes appropriate training and checking; and

(2) The training and checking programme is specified in the Operations Manual and is acceptable to the Authority.

OPS 3.970 Recent Experience

(a) The operator shall ensure that, except as permitted in sub-paragraph (b) below:

(1) A pilot does not operate a helicopter unless he has carried out at least three take-offs, three circuits and three landings as pilot flying in a helicopter of the same type, or a Flight Simulator, of the helicopter type to be used, in the preceding 90 days.

(2) For night VMC operations:

(i) a pilot without a valid instrument rating has carried out at least three take-offs, three circuits and three landings at night in the preceding 90 days. This recency may be obtained in a FSTD.

(ii) a pilot with a valid instrument rating satisfies the night recent experience requirement if he has carried out at least three instrument approaches in the preceding 90 days. This recency may be obtained in a FSTD.

(b) The 90 day period prescribed in sub-paragraph (a) above may be extended up to a maximum of 120 days by line flying under the supervision of a nominated commander.

OPS 3.975 Route/Role/Area - Competence Qualification
(See AMC OPS 3.975)

(a) The operator shall ensure that, prior to being assigned as commander or as pilot to whom the conduct of flight may be delegated by the commander on a route, in a role or an area, the pilot has obtained adequate knowledge of the route to be flown and of the heliports (including alternates), facilities and procedures to be used. Each such pilot shall demonstrate to the operator an adequate knowledge of the operation to be flown. This shall include knowledge of:

(1) the terrain and minimum safe altitudes;

(2) the seasonal meteorological conditions;

(3) the meteorological, communication and air traffic facilities, services and procedures;

(4) the search and rescue procedures; and

(5) the navigation facilities and procedures associated with the route or area in which the flight is to take place; and

(b) procedures applicable to flight paths over heavily populated areas and areas of high air traffic density, obstructions, physical layout, lighting, approach aids and arrival, departure, holding and instrument approach procedures, and applicable operating minima.

(c) A pilot-in-command shall have made a flight, representative of the operation with which the pilot is to be engaged which must include a landing at a representative heliport, as a member of the flight crew and accompanied by a pilot who is qualified for the operation.

(d) The operator shall not continue to utilise a pilot as a pilot-in-command on an operation in an area specified by the operator and approved by the Authority unless, within the preceding 12 months, the pilot has made at least one representative flight as a pilot member of the flight crew, or as a check pilot, or as an observer on the flight deck. In the event that more than 12 months elapse in which a pilot has not made such a representative flight, prior to again serving as a pilot-in-command on that operation, that pilot must requalify in accordance with sub-paragraphs (a), (b) and (c) above.

(e) The period of validity of the route/role/area competence qualification shall be 12 calendar months in addition to the remainder of:

(1) The month of qualification; or

(2) The month of the latest operation on the route, in the role or area.

(f) The route/role/area competence qualification shall be revalidated by operating on the route, in the role or area within the period of validity prescribed in sub-paragraph (f) above.

(g) If revalidated within the final 2 calendar months of validity of previous route/role/area competence qualification, the period of validity shall extend from the date of revalidation until 12 calendar months from the expiry date of that previous route/role/area competence qualification.

OPS 3.980 Operation on More than one Type or Variant
(See AMC OPS 3.980)

(a) The operator shall ensure that a flight crew member does not operate more than one type or a variant unless:

(1) The flight crew member is competent to do so; and

(2) Appropriate procedures, approved by the Authority are included in the Operations Manual.

(b) When the operator schedules flight crew on several variants of the same type of helicopter or different types of helicopters with similar characteristics in terms of operating procedures, systems and handling, the Authority shall decide under which conditions the requirements of OPS 3.965 for each variant or each type of helicopter can be combined.

OPS 3.985 Training Records
(See AMC OPS 3.985)

The operator shall:

(a) Maintain records of all training, checking and qualification prescribed in OPS 3.945, 3.955, 3.965, 3.968 and 3.975 undertaken by a flight crew member; and

(b) Make the records of all conversion courses and recurrent training and checking available, on request, to the flight crew member concerned.

Appendix 1 to OPS 3.940(c)

Single Pilot Operations under IFR or at Night

(a) Helicopters referred to in OPS 3.940(c) may be operated by a single pilot under IFR or at night when the following requirements are satisfied:

(1) The operator shall include in the Operations Manual a pilot's conversion and recurrent training programme which includes the additional requirements for a single pilot operation;

(2) Training and Recency. Attention shall be given to cockpit procedures, especially in respect of:

(i) Engine management and emergency handling;

(ii) Use of normal, abnormal and emergency checklist;

(iii) ATC communication;

(iv) Cockpit procedures in respect of departure and approach;

(v) Autopilot management, if applicable; and

(vi) Simplified in-flight documentation;

(3) The recurrent checks required by OPS 3.965 shall be performed in the single-pilot role on the particular helicopter type in an environment representative of the operation;

(4) The pilot shall meet the Commanders minimum qualification requirements of OPS 3.960.

(5) For IFR operations, the pilot shall have experience as follows:

(i) 25 hours total IFR flight experience in the relevant operating environment.

(ii) 25 hours flight experience on the specific type of helicopter, approved for single pilot IFR, of which 10 hours is as commander or commander under supervision, including 5 sectors of IFR line flying under supervision using the single pilot procedures.

(iii) The minimum required recent experience for a pilot engaged in a single-pilot operation under IFR shall be 5 IFR flights, including 3 instrument approaches, carried out during the preceding 90 days on a helicopter approved in the single-pilot role. This requirement may be replaced by an IFR instrument approach check on the helicopter or a FSTD.

Note: Additional equipment requirements for alleviating pilot workload are prescribed in OPS 3.655.

Appendix 1 to OPS 3.955

Upgrading to Commander

(a) *Upgrade Training Course*

(1) The command course required by OPS 3.955(a) must be specified in the Operations Manual and include at least the following:

(i) Training in a flight simulator (including Line Orientated Flying Training) and/or flying training including a proficiency check operating as commander;

(ii) Operator command responsibilities;

(iii) Line training in command under supervision. A minimum of 10 hours including at least 10 sectors is required for pilots already qualified on the helicopter type;

(iv) Completion of a commander's line check and route/role/area competency qualification.

(v) For initial upgrade to commander the course shall also include CRM. (See AC-1 OPS 3.943).

(2) *Combined Upgrading and Conversion Course*. If a pilot is converting from one helicopter type or variant to another when upgrading to commander:

(i) The Command Course shall also include a Conversion Course in accordance with OPS 3.945.

(ii) Additional sectors shall be required for a pilot transitioning on to a new type of helicopter.

Appendix 1 to OPS 3.965

Recurrent Training and Checking - Pilots
(See AMC Appendix 1 to OPS 3.965)
(See AC No. 1 to OPS 3.943)
(See AC No. 2 to OPS 3.943)
(See AMC OPS 3.945)

(a) *Recurrent Training* - Recurrent training shall comprise:

(1) *Ground and refresher training*

(i) The ground and refresher training programme shall include:

(A) Helicopter systems;

(B) Operational procedures and requirements including ground de-/anti-icing and pilot incapacitation; and

(C) Accident/Incident and occurrence review.

(ii) Knowledge of the ground and refresher training shall be verified by a questionnaire or other suitable methods.

(2) *Helicopter/flight simulator training*

(i) The helicopter/flight simulator training programme shall be established such that all major failures of helicopter systems and associated procedures will be covered within a 3 year period.

(ii) When engine malfunctions are simulated, if no synthetic training device is available, these emergencies may be covered in the helicopter using a safe airborne simulation. In the event that such training is conducted in the helicopter, due consideration must be given to the effect of any subsequent failure and the exercise must be preceded by a comprehensive briefing.

(iii) Helicopter/flight simulator training may be combined with the operator proficiency check.

(3) *Emergency and Safety Equipment Training*

(i) The emergency and safety equipment training programme may be combined with emergency and safety equipment checking and shall be conducted in a helicopter or a suitable alternative training device.

(ii) Every year the emergency and safety equipment training programme must include the following:

(A) Actual donning of a lifejacket, where fitted;

(B) Actual donning of protective breathing equipment, where fitted;

(C) Actual handling of fire extinguishers, of the type used;

(D) Instruction on the location and use of all emergency and safety equipment carried on the helicopter;

(E) Instruction on the location and use of all types of exits; and

(F) Security procedures.

(iii) Every three years the programme of training must include the following:

(A) Actual operation of all types of exits;

(B) Actual fire-fighting using equipment representative of that carried in the helicopter on an actual or simulated fire except that, with Halon extinguishers, an alternative method acceptable to the Authority may be used;

(C) The effects of smoke in an enclosed area and actual use of all relevant equipment in a simulated smoke-filled environment, if applicable;

(D) Demonstration in the use of the life-rafts where fitted, or, demonstration and use of the life-rafts where they are fitted for extended overwater operations (See AMC to Appendix 1 to OPS 3.965, sub-paragraph (a)(3)(iii)(D);

(E) First aid; appropriate to the helicopter type, the kind of operation and crew complement (particularly in the case when crew members are not carried); and

(F) when serving on helicopters operated above 3 000 m (10000 ft), the effect of lack of oxygen and, in the case of pressurised helicopters, as regards physiological phenomena accompanying a loss of pressurisation.

(4) *CRM.*

(b) *Recurrent checking*. Recurrent checking shall comprise:

(1) *Operator proficiency checks*.

(i) Where applicable, proficiency checks must include the following abnormal/emergency procedures:

(A) Engine fire;

(B) Fuselage fire;

(C) Emergency operation of under carriage;

(D) Fuel dumping;

(E) Engine Failure and relight;

(F) Hydraulic failure;

(G) Electrical failure;

(H) Engine failure during take-off before decision point;

(I) Engine failure during take-off after decision point;

(J) Engine failure during landing before decision point;

(K) Engine failure during landing after decision point;

(L) Flight and engine control system malfunctions;

(M) Recovery from unusual attitudes;

(N) Landing with one or more engine(s) inoperative;

(O) IMC auto-rotation techniques;

(P) Auto-rotation to a designated area;

(Q) Pilot incapacitation; and

(R) Directional control failures and malfunctions.

(ii) For pilots required to engage in IFR operations proficiency checks include the following additional abnormal/emergency procedures:

(A) Precision instrument approach to minima with, in the case of multi-engined helicopters, a simulated failure of one engine;

(B) Go-around on instruments from minima with, in the case of multi-engined helicopters, a simulated failure of one engine;

(C) Non precision approach to minima;

(D) Landing with a simulated failure of one or more engines; and

(E) Where appropriate to the helicopter type, approach with flight control system/flight director system malfunctions, flight instrument and navigation equipment failures.

(2) *Emergency and safety equipment checks*. The items to be checked shall be those for which training has been carried out in accordance with sub-paragraph (a)(3) above.

(3) *Line checks*;

(i) Line checks must establish the ability to perform satisfactorily a complete line operation including pre-flight and post-flight procedures and use of the equipment provided, as specified in the Operations Manual.

(ii) The flight crew must be assessed on their CRM skills for the purpose of;

(A) providing feedback to the crew collectively and individually; and

(B) improving the CRM training system.

(iii) When pilots are assigned duties as pilot flying and pilot non-flying they must be checked in both functions.

(iv) Line checks must be completed in a helicopter.

(v) The person conducting a line check, who is described in OPS 3.965(a)(4)(ii), should occupy an observer's seat whenever practical.

(4) *Single pilot operations*;

(i) The recurrent checks required by sub-paragraphs (1) to (3) above shall be performed in the single pilot role on a particular helicopter type in an environment representative of the operation.

Appendix 1 to OPS 3.968

Pilot Qualification to Operate in either Pilot's Seat

(a) Commanders whose duties also require them to carry out the duties of co-pilot, or commanders required to conduct training or examining duties, shall complete their proficiency checks respectively from left and right hand seats, on alternative proficiency checks, provided that when the type rating proficiency check is combined with the operator proficiency check the commander completes his training or checking from his normally occupied seat. All checks, from whatever seat, must be completed as prescribed in OPS 3.965(b)

(b) When engine-out manoeuvres are carried out in a helicopter, the engine failure must be simulated. When carried out in a single engine helicopter, the engine failure must be simulated and the training captain must carry out the autorotative landing respectively from left and right hand seats on alternative proficiency checks.

(c) When operating in the co-pilot's seat, the checks required by OPS 3.965 and OPS 3.968 for operating in the commander's seat must, in addition, be valid and current.

(d) A pilot relieving the commander shall have demonstrated, concurrent with the operator proficiency checks prescribed in OPS 3.965(b), practice of drills and procedures which would not, normally, be the relieving pilot's responsibility. Where the differences between left and right seats are not significant (for example because of use of autopilot) then practice may be conducted in either seat.

(e) A pilot other than the commander occupying the commander's seat shall demonstrate practice of drills and procedures, concurrent with the operator proficiency checks prescribed in OPS 3.965(b), which would otherwise have been the commander's responsibility acting as pilot non-flying. Where the differences between right and left seats are not significant (for example because of use of autopilot) then practice may be conducted in either seat.

SUBPART O

CREW MEMBERS OTHER THAN FLIGHT CREW

OPS 3.988 Applicability

The operator shall ensure that all crew members, other than flight crew members, assigned by the operator to duties in the helicopter, comply with the requirements of this Subpart.

OPS 3.990 Assignment of Emergency Duties

The operator shall establish, to the satisfaction of the Authority, the minimum number of cabin crew required for each type of helicopter, based on seating capacity or the number of passengers carried, which shall not be less than the minimum number established during certification, in order to effect a safe and expeditious evacuation of the helicopter, and the necessary functions to be performed in an emergency or a situation requiring emergency evacuation. The operator shall assign these functions for each type of helicopter.

OPS 3.995 Minimum Requirements

(See AC OPS 3.995(b))

The operator shall ensure that each cabin crew member:

(a) is at least 18 years of age;

(b) has passed a medical examination or assessment at regular intervals as required by the Authority so as to check the medical fitness to discharge his/her duties;

(c) has successfully completed initial training in accordance with OPS 3.1005 and holds an attestation of safety training;

(d) has completed the appropriate conversion and/or differences training covering at least the subjects listed in OPS 3.1010;

(e) shall undergo recurrent training in line with the provisions of OPS 3.1015;

(f) is competent to perform his/her duties in accordance with procedures specified in the Operations Manual.

OPS 3.1005 Initial Training

(See AC OPS 3.1005)

The operator shall ensure that each crew member successfully completes initial training, (which shall include appropriate elements of OPS 3.943), accepted by the Authority, and the checking prescribed in OPS 3.1025 before undertaking conversion training. At the discretion of the Authority, the operator or the approved training organisation providing the training course, shall deliver an attestation of safety training to a cabin crew member after he/she has completed the initial safety training and successfully passed the check referred to in OPS 3.1025.

OPS 3.1010 Conversion and Differences Training

(See AC OPS 3.1010)

(a) The operator shall ensure that each crew member has completed appropriate training, as specified in the Operations Manual, before undertaking assigned duties as follows:

(1) Conversion training; A conversion course must be completed before being:

(i) First assigned by the operator to operate as a crew member; or

(ii) Assigned to operate another helicopter type; and

(2) Differences training. Differences training must be completed before operating:

(i) On a variant of a helicopter type currently operated; or

(ii) With different safety equipment, safety equipment location, equipment relevant to the crew member's duties, or normal and emergency procedures on currently operated helicopter types or variants.

(b) The operator shall determine the content of the conversion or differences training taking account of the crew member's previous training as recorded in the crew member's training records required by OPS 3.1035.

(c) The operator shall ensure that:

(1) Conversion training is conducted in a structured and realistic manner;

(2) Differences training is conducted in a structured manner; and

(3) Conversion training, and if necessary differences training, includes the use of all relevant equipment (including safety equipment) and emergency procedures applicable to the type or variant of helicopter and involves training and practice on either a representative training device or on the actual helicopter.

(4) Elements of CRM training are integrated into the conversion course.

(5) Crew members, when serving on helicopters operated above 3 000 m (10000 ft), are knowledgeable as regards the effect of lack of oxygen and, in the case of pressurised helicopters, as regards physiological phenomena accompanying a loss of pressurisation.

OPS 3.1012 Familiarisation Flights

The operator shall ensure that, following completion of conversion training, each crew member undertakes familiarisation flight prior to operating as one of the crew members required by OPS 3.

OPS 3.1015 Recurrent Training

(See AC OPS 3.1015)

(a) The operator shall ensure that each crew member undergoes recurrent training, covering the actions assigned to each crew member in normal and emergency procedures and drills relevant to the type(s) and/or variant(s) of helicopter on which they operate.

(b) The operator shall ensure that the recurrent training and checking programme accepted by the Authority includes theoretical and practical instruction, together with individual practice.

(c) The period of validity of recurrent training and the associated checking required by OPS 3.1025 shall be 12 calendar months in addition to the remainder of the month of issue. If issued within the final 2 calendar months of validity of a previous check, the period of validity shall extend from the date of issue until 12 calendar months from the expiry date of that previous check.

(d) The operator shall ensure that:

(1) Elements of CRM are integrated into all appropriate phases of the recurrent training; and

(2) Each crew member undergoes specific modular CRM training. All major topics of the initial CRM training shall be covered over a period not exceeding 3 years.

OPS 3.1020 Refresher Training
(See AC OPS 3.1020)

(a) The operator shall ensure that each crew member who has been absent from all flying duties for more than 6 months completes refresher training specified in the Operations Manual

(b) The operator shall ensure that when a crew member has not been absent from all flying duties, but has not, during the preceding 6 months, undertaken duties on a type of helicopter as a crew member, before undertaking such duties on that type, the crew member either:

(1) Completes refresher training on the type; or

(2) Operates two re-familiarisation sectors.

OPS 3.1025 Checking
(See AC OPS 3.1025)

(a) The operator shall ensure that during or following completion of the training required by OPS 3.1005, 3.1010 and 3.1015, each crew member undergoes a check covering the training received in order to verify his proficiency in carrying out normal and emergency safety duties. These checks must be performed by personnel acceptable to the Authority.

(b) The operator shall ensure that each crew member undergoes checks as follows:

(1) *Initial training*. (See AC OPS 3.1005);

(2) *Conversion and Differences training*. (See AC OPS 3.1010); and

(3) *Recurrent training*. (See AC OPS 3.1015).

(4) *Refresher training*. (See AC OPS 3.1020).

OPS 3.1030 Operation on More than one Type or Variant

(a) The operator shall ensure that each crew member does not operate on more than three helicopter types except that, with the approval of the Authority, the crew member may operate on four helicopter types, provided that safety equipment and emergency procedures for at 1east two of the types are similar.

(b) For the purposes of sub-paragraph (a) above, variants of a helicopter type are considered to be different types if they are not similar in all the following aspects:

(1) Emergency exit operation;

(2) Location and type of safety equipment; and

(3) Emergency procedures.

OPS 3.1035 Training Records

The operator shall:

(a) Maintain records of all training and checking required by OPS 3.1005, 3.1010, 3.1015, 3.1020 and 3.1025; and

(b) keep a copy of the attestation of safety training; and

(c) keep the training records and records of medical examinations or assessments up to date, showing in the case of the training records the dates and contents of the conversion, differences and recurrent training received; and

(d) Make the records of all initial, conversion and recurrent training and checking available, on request, to the crew member concerned.

SUBPART P

MANUALS, LOGS AND RECORDS

OPS 3.1040 General Rules for Operations Manuals

(a) The operator shall ensure that the Operations Manual contains all instructions and information necessary for operations personnel to perform their duties.

(b) The operator shall ensure that the contents of the Operations Manual, including all amendments or revisions, do not contravene the conditions contained in the Air Operator Certificate (AOC) or any applicable regulations and are acceptable to, or, where applicable, approved by, the Authority. (See AMC OPS 3.1040(b).)

(c) Unless otherwise approved by the Authority, the operator must prepare the Operations Manual in the English language in accordance with OPS 3.1045 and Appendix 1 to OPS 3.1045. In addition, the operator may translate and use that manual, or parts thereof, into another language. (See AMC OPS 3.1040(c)).

(d) Should it become necessary for the operator to produce new Operations Manuals or major parts/volumes thereof, he must comply with sub-paragraph (c) above.

(e) The operator may issue an Operations Manual in separate volumes.

(f) The operator shall ensure that all operations personnel have easy access to a copy of each part of the Operations Manual which is relevant to their duties. In addition, the operator shall supply crew members with a personal copy of, or sections from, Parts A and B of the Operations Manual as are relevant for personal study.

(g) The operator shall ensure that the Operations Manual is amended or revised so that the instructions and information contained therein are kept up to date. The operator shall ensure that all operations personnel are made aware of such changes that are relevant to their duties.

(h) Each holder of an Operations Manual, or appropriate parts of it, shall keep it up to date with the amendments or revisions supplied by the operator.

(i) The operator shall supply the Authority with intended amendments and revisions in advance of the effective date. When the amendment concerns any part of the Operations Manual which must be approved in accordance with OPS 3, this approval shall be obtained before the amendment becomes effective. When immediate amendments or revisions are required in the interest of safety, they may be published and applied immediately, provided that any approval required has been applied for.

(j) The operator shall incorporate all amendments and revisions required by the Authority.

(k) The operator must ensure that information taken from approved documents, and any amendment of such approved documentation, is correctly reflected in the Operations Manual and that the Operations Manual contains no information contrary to any approved documentation. However, this requirement does not prevent the operator from using more conservative data and procedures.

(l) The operator must ensure that the contents of the Operations Manual are presented in a form in which they can be used without difficulty. The design of the manual shall observe Human Factors and CRM principles.

(m) The operator may be permitted by the Authority to present the Operations Manual or parts thereof in a form other than on printed paper. In such cases, an acceptable level of accessibility, usability and reliability must be assured.

(n) The use of an abridged form of the Operations Manual does not exempt the operator from the requirements of OPS 3.130.

OPS 3.1045 Operations Manual - Structure and Contents
(See Appendix 1 to OPS 3.1045)
(See AMC OPS 3.1045)

(a) The operator shall ensure that the main structure of the Operations Manual is as follows:

Part A. *General/Basic*

This part shall comprise all non type-related operational policies, instructions and procedures needed for a safe operation.

Part B. *Helicopter Operating Matters*

This part shall comprise all type-related instructions and procedures needed for a safe operation. It shall take account of any differences between types, variants or individual helicopters used by the operator.

Part C. *Route/Role/Area and Heliport Instructions and Information*

This part shall comprise all instructions and information needed for the area of operation.

Part D. *Training*

This part shall comprise all training instructions for personnel required for a safe operation.

(b) The operator shall ensure that the contents of the Operations Manual are in accordance with Appendix 1 to OPS 3.1045 and relevant to the area(s) and type(s) of operation.

(c) The operator shall ensure that the detailed structure of the Operations Manual is acceptable to the Authority. (See AMC OPS 3.1045(c).)

OPS 3.1050 Helicopter Flight Manual

(a) The operator shall keep a current approved Helicopter Flight Manual or equivalent document for each helicopter that it operates.

(b) The flight manual shall be updated by implementing changes made mandatory by the Authority, as State of Registry.

OPS 3.1055 Journey Log

(a) The operator shall retain the following information for each flight in the form of a Journey Log:

(1) Helicopter registration;

(2) Date;

(3) Name(s) of crew member(s);

(4) Duty assignment of crew member(s);

(5) Place of departure;

(6) Place of arrival;

(7) Time of departure;

(8) Time of arrival;

(9) Hours of flight;

(10) Nature of flight (private, scheduled or non-scheduled);

(11) Incidents, observations (if any); and

(12) Commander's signature (or equivalent) (see AMC OPS 3.1055 (a)(12)).

(b) The operator may be permitted not to keep a helicopter journey log, or parts thereof, by the Authority if the relevant information is available in other documentation. (See AMC OPS 3.1055(b).)

(c) Entries in the journey log book should be made currently and in ink or indelible pencil.

(d) Completed journey log books should be retained to provide a continuous record of the last six months' operations.

OPS 3.1060 Operational Flight Plan

(a) The operator must ensure that the operational flight plan used and the entries made during flight contain the following items:

(1) Helicopter registration;

(2) Helicopter type and variant;

(3) Date of flight;

(4) Flight identification;

(5) Names of flight crew members;

(6) Duty assignment of flight crew members;

(7) Place of departure;

(8) Time of departure;

(9) Place of arrival (planned and actual);

(10) Time of arrival;

(11) Type of operation (VFR, HEMS, etc.);

(12) Route and route segments with checkpoints/waypoints, distances, time and tracks;

(13) Planned cruising speed and flying times between check-points/way-points. Estimated and actual times overhead;

(14) Safe altitudes and minimum levels;

(15) Planned altitudes and flight levels;

(16) Fuel calculations (records of in-flight fuel checks);

(17) Fuel on board when starting engines;

(18) Alternate(s) for destination and, where applicable, take-off and en-route, including information required in sub-paragraphs (12), (13), (14), and (15) above;

(19) Initial ATS Flight Plan clearance and subsequent re-clearance;

(20) In-flight re-planning calculations; and

(21) Relevant meteorological information.

(b) Items which are readily available in other documentation or from an acceptable source or are irrelevant to the type of operation may be omitted from the operational flight plan.

(c) The operator must ensure that the operational flight plan and its use is described in the Operations Manual.

(d) The operator shall ensure that all entries on the operational flight plan are made concurrently and that they are permanent in nature.

(e) The operational flight plan shall be completed for every intended flight and shall be approved by the pilot in command, and where applicable, by the flight operations officer/flight dispatcher.

(f) The operator shall determine the most efficient means of lodging the operational flight plan.

OPS 3.1065 Document Storage Periods

The operator shall ensure that all records and all relevant operational and technical information for each individual flight, are stored for the periods prescribed in Appendix 1 to OPS 3.1065.

OPS 3.1070 Operator's Maintenance Management Exposition

The operator shall keep a current approved maintenance management exposition as prescribed in OPS 3.905.

OPS 3.1071 Helicopter Technical Log

The operator shall keep a helicopter technical log as prescribed in OPS 3.915.

Appendix 1 to OPS 3.1045

Operations Manual Contents
(See AMC Appendix 1 to OPS 3.1045)

The operator shall ensure that the Operations Manual contains the following:

A GENERAL/BASIC

0 ADMINISTRATION AND CONTROL OF OPERATIONS MANUAL

0.1 *Introduction*

(a) A statement that the manual complies with all applicable regulations and with the terms and conditions of the applicable Air Operator Certificate.

(b) A statement that the manual contains operational instructions that are to be complied with by the relevant personnel.

(c) A list and brief description of the various parts, their contents, applicability and use.

(d) Explanations and definitions of terms and words needed for the use of the manual.

0.2 *System of amendment and revision*

(a) Who is responsible for the issuance and insertion of amendments and revisions.

(b) A record of amendments and revisions with insertion dates and effective dates.

(c) A statement that handwritten amendments and revisions are not permitted except in situations requiring immediate amendment or revision in the interest of safety.

(d) A description of the system for the annotation of pages and their effective dates.

(e) A list of effective pages.

(f) Annotation of changes (on text pages and, as far as practicable, on charts and diagrams).

(g) Temporary revisions.

(h) A description of the distribution system for the manuals, amendments and revisions.

1 ORGANISATION AND RESPONSIBILITIES

1.1 *Organisational structure*. A description of the organisational structure including the general company organigram and operations department organigram. The organigram must depict the relationship between the Operations Department and the other Departments of the company. In particular, the subordination and reporting lines of all Divisions, Departments etc., which pertain to the safety of flight operations, must be shown.

1.2 *Nominated postholders*. The name of each nominated postholder responsible for flight operations, continuing airworthiness, crew training and ground operations, as prescribed in OPS 3 Subpart C. A description of their function and responsibilities must be included.

1.3 *Responsibilities and duties of operations management personnel*. A description of the duties, responsibilities and authority of operations management personnel pertaining to the safety of flight operations and the compliance with the applicable regulations.

1.4 *Authority, duties and responsibilities of the commander*. A statement defining the authority, duties and responsibilities of the commander.

1.5. *Duties and responsibilities of crew members other than the commander*

2 OPERATIONAL CONTROL AND SUPERVISION

2.1 *Supervision of the operation by the operator*. A description of the system for supervision of the operation by the operator (see OPS 3.175(g)). This must show how the safety of flight operations and the qualifications of personnel are supervised. In particular, the procedures related to the following items must be described:

(a) Licence and qualification validity;

(b) Competence of operations personnel; and

(c) Control, analysis and storage of records, flight documents, additional information and data.

2.2 *System of promulgation of additional operational instructions and information*. A description of any system for promulgating information which may be of an operational nature but is supplementary to that in the Operations Manual. The applicability of this information and the responsibilities for its promulgation must be included.

2.3 *Safety management system*. A description of the main aspects of the safety management programme.

2.4 *Operational control*. A description of the procedures and responsibilities necessary to exercise operational control with respect to flight safety.

2.5 *Powers of the Authority.* A description of the powers of the Authority.

3 QUALITY SYSTEM

A description of the quality system adopted including at least:

(a) Quality policy;

(b) A description of the organisation of the Quality System; and

(c) Allocation of duties and responsibilities.

4 CREW COMPOSITION

4.1 *Crew Composition*. An explanation of the method for determining crew compositions taking account of the following:

(a) The type of helicopter being used;

(b) The area and type of operation being undertaken;

(c) The phase of the flight;

(d) The minimum crew requirement and flight duty period planned;

(e) Experience (total and on type), recency and qualification of the crew members; and

(f) The designation of the commander.

(g) The designation of the senior cabin crew member.

4.2 *Intentionally blank*

4.3 *Flight crew incapacitation*. Instructions on the succession of command in the event of flight crew incapacitation.

4.4 *Operation on more than one type.* A statement indicating which helicopters are considered as one type for the purpose of:

(a) Flight crew scheduling; and

(b) Cabin crew scheduling.

5 QUALIFICATION REQUIREMENTS

5.1 A description of the required licence, rating(s), qualification/competency (e.g. for routes and aerodromes), experience, training, checking and recency for operations personnel to conduct their duties. Consideration must be given to the helicopter type, kind of operation and composition of the crew.

5.2 *Flight crew*

(a) Commander.

(b) Pilot relieving the commander.

(c) Co-pilot.

(d) Pilot under supervision.

(e) System panel operator.

(f) Operation on more than one type or variant.

5.3 *Cabin crew*

(a) Senior cabin crew member.

(b) Cabin crew member.

(i) Required cabin crew member.

(ii) Additional cabin crew member and cabin crew member during familiarisation flights.

(c) Operation on more than one type or variant.

5.4 *Training, checking and supervision personnel*

(a) For flight crew.

(b) For cabin crew.

5.5 *Other operations personnel*

6 CREW HEALTH PRECAUTIONS

6.1 *Crew health precautions*. The relevant regulations and guidance to crew members concerning health including:

(a) Psychoactive substances including but not limited to:

(i) Anti depressants;

(ii) Alcohol and other intoxicating liquids;

(iii) Narcotics;

(iv) Drugs; and

(v) Sleeping tablets.

(b) Pharmaceutical preparations;

(c) Immunisation;

(d) Diving involving underwater pressure breathing devices;

(e) Blood/bone marrow donation;

(f) Meal precautions prior to and during flight;

(g) Sleep and rest; and

(h) Surgical operations.

7 FLIGHT TIME LIMITATIONS

7.1 *Flight and Duty Time Limitations and Rest Requirements*. A description of the flight and duty time limitations and rest requirements prescribed in OPS 3 Subpart Q as applicable to the operation.

7.2 *Exceedances of flight and duty time limitations and/or reductions of rest periods*. Conditions under which flight and duty time may be exceeded or rest periods may be reduced and the procedures used to report these modifications.

8 OPERATING PROCEDURES

8.1 *Flight Preparation Instructions*. As applicable to the operation:

8.1.1 *Minimum Flight Altitudes*. A description of the method of determination and application of minimum altitudes including:

(a) A procedure to establish the minimum altitudes/flight levels for VFR flights; and

(b) A procedure to establish the minimum altitudes/flight levels for IFR flights.

8.1.2 *Criteria for determining the usability of aerodromes*

8.1.3 *Methods for the determination of aerodrome operating minima*. The method for establishing aerodrome operating minima for IFR flights in accordance with OPS 3 Subpart E. Reference must be made to procedures for the determination of the visibility and/or runway visual range and for the applicability of the actual visibility observed by the pilots, the reported visibility and the reported runway visual range.

8.1.4 En-route Operating Minima for VFR Flights or VFR portions of a flight and, where single engined helicopters are used, instructions for route selection with respect to the availability of surfaces which permit a safe forced landing.

8.1.5 *Presentation and Application of Aerodrome and En-route Operating Minima*

8.1.6 *Interpretation of meteorological information*. Explanatory material on the decoding of MET forecasts and MET reports relevant to the area of operations, including the interpretation of conditional expressions.

8.1.7 *Determination of the quantities of fuel, oil and water methanol carried*. The methods by which the quantities of fuel, oil and water methanol to be carried are determined and monitored in flight. This section must also include instructions on the measurement and distribution of the fluid carried on board. Such instructions must take account of all circumstances likely to be encountered on the flight, including the possibility of in-flight replanning and of failure of one or more of the helicopter's power plants. The system for maintaining fuel and oil records must also be described.

8.1.8 *Mass and Centre of Gravity*. The general principles of mass and centre of gravity including:

(a) Definitions;

(b) Methods, procedures and responsibilities for preparation and acceptance of mass and centre of gravity calculations;

(c) The policy for using either standard and/or actual masses;

(d) The method for determining the applicable passenger, baggage and cargo mass;

(e) The applicable passenger and baggage masses for various types of operations and helicopter type;

(f) General instruction and information necessary for verification of the various types of mass and balance documentation in use;

(g) Last Minute Changes procedures;

(h) Specific gravity of fuel, oil and water methanol;

(i) Seating policy/procedures; and

(j) Standard load plans.

8.1.9 *ATS Flight Plan*. Procedures and responsibilities for the preparation and submission of the air traffic services flight plan. Factors to be considered include the means of submission for both individual and repetitive flight plans.

8.1.10 *Operational Flight Plan*. Procedures and responsibilities for the preparation and acceptance of the operational flight plan. The use of the operational flight plan must be described including samples of the operational flight plan formats in use.

8.1.11 *Operator's Helicopter Technical Log*. The responsibilities and the use of the operator's Helicopter Technical Log must be described, including samples of the format used.

8.1.12 *List of documents, forms and additional information to be carried*

8.2 *Ground Handling Instructions*

Note: This section should also contain subcontracting policies; handling processes; and procedures and practices for all ground handling operations.

8.2.1 *Fuelling procedures*. A description of fuelling procedures, including:

(a) Safety precautions during refuelling and defueling including rotors running, engine(s) running and when an APU is in operation;

(b) Refuelling and defueling when passengers are embarking, on board or disembarking; and

(c) Precautions to be taken to avoid mixing fuels.

8.2.2 *Helicopter, passengers and cargo handling procedures related to safety*. A description of the handling procedures to be used when allocating seats and embarking and disembarking passengers and when loading and unloading the helicopter. Further procedures, aimed at achieving safety whilst the helicopter is on the ramp, must also be given. Handling procedures must include:

(a) Children/infants, sick passengers and Persons with Reduced Mobility;

(b) Transportation of inadmissible passengers, deportees or persons in custody;

(c) Permissible size and weight of hand baggage;

(d) Loading and securing of items in the helicopter;

(e) Special loads and classification of load compartments;

(f) Positioning of ground equipment;

(g) Operation of helicopter doors;

(h) Safety on the ramp, including fire prevention, blast and suction areas;

(i) Start-up, ramp departure and arrival procedures;

(j) Servicing of helicopters; and

(k) Documents and forms for helicopter handling;

(l) Multiple occupancy of helicopter seats.

8.2.3 *Procedures for the refusal of embarkation*. Procedures to ensure that persons who appear to be intoxicated or who demonstrate by manner or physical indications that they are under the influence of drugs, except medical patients under proper care, are refused embarkation.

8.2.4 *De-icing and Anti-icing on the ground*. A description of the de-icing and anti-icing policy and procedures for helicopters on the ground. These shall include descriptions of the types and effects of icing and other contaminants on helicopters whilst stationary, during ground movements and during take-off. In addition, a description of the fluid types used must be given including:

(a) Proprietary or commercial names;

(b) Characteristics;

(c) Effects on helicopter performance;

(d) Hold-over times; and

(e) Precautions during usage.

8.3 *Flight Procedures*

8.3.1 *VFR/IFR Policy*. A description of the policy for allowing flights to be made under VFR, or of requiring flights to be made under IFR, or of changing from one to the other.

8.3.2 *Navigation Procedures*. A description of all navigation procedures relevant to the type(s) and area(s) of operation. Consideration must be given to:

(a) Standard navigational procedures including policy for carrying out independent cross-checks of keyboard entries where these affect the flight path to be followed by the helicopter;

(b) POLAR navigation and navigation in other designated areas;

(c) RNAV. A description of the relevant RNAV procedures specified in Part C;

(d) In-flight replanning; and

(e) Procedures in the event of system degradation.

8.3.3 *Altimeter setting procedures*

8.3.4 *Audio voice alerting device*

8.3.5 *Intentionally blank*

8.3.6 *Intentionally blank*

8.3.7 *Policy and procedures for in-flight fuel management*

8.3.8 *Adverse and potentially hazardous atmospheric conditions*. Procedures for operating in, and/or avoiding, potentially hazardous atmospheric conditions including:

(a) Thunderstorms;

(b) Icing conditions;

(c) Turbulence;

(d) Windshear;

(e) Jet stream;

(f) Volcanic ash clouds;

(g) Heavy precipitation;

(h) Sand storms;

(i) Mountain waves; and

(j) Significant Temperature inversions.

8.3.9 *Wake Turbulence and Rotor Downwash*. Wake turbulence and rotor downwash separation, taking into account helicopter types, wind conditions and FATO location.

8.3.10 *Crew members at their stations*. The requirements for crew members to occupy their assigned stations or seats during the different phases of flight or whenever deemed necessary in the interest of safety.

8.3.11 *Use of safety belts for crew and passengers*. The requirements for crew members and passengers to use safety belts and/or harnesses during the different phases of flight or whenever deemed necessary in the interest of safety.

8.3.12 *Admission to Cockpit*. The conditions for the admission to the cockpit of persons other than the flight crew. The policy regarding the admission of Inspectors from the Authority must also be included.

8.3.13 *Use of vacant crew seats*. The conditions and procedures for the use of vacant crew seats.

8.3.14 *Incapacitation of crew members*. Procedures to be followed in the event of incapacitation of crew members in flight. Examples of the types of incapacitation and the means for recognising them must be included.

8.3.15 *Cabin Safety Requirements*. Procedures covering:

(a) Cabin preparation for flight, in-flight requirements and preparation for landing including procedures for securing cabin and galleys;

(b) Procedures to ensure that passengers are seated where, in the event that an emergency evacuation is required, they may best assist and not hinder evacuation from the helicopter;

(c) Procedures to be followed during passenger embarkation and disembarkation;

(d) Procedures in the event of fuelling with passengers on board or embarking and disembarking; and

(e) Smoking on board.

8.3.16 *Passenger briefing procedures*. The contents, means and timing of passenger briefing in accordance with OPS 3.285.

8.3.17 Other Policy and Procedures. The addition of policy and procedures for the following;

(a) implementation of Flight Manual changes made mandatory or approved by the Authority or State of Registry;

(b) retention of Flight Recorder recording and flight recorders in safe custody pending disposition.

(c) the avoidance of CFIT;

(d) the use of GPWS.

8.4 *AWO.* A description of the operational procedures associated with All Weather Operations. (See also OPS 3, Subparts D & E) including instructions and requirements for the use of automatic landing systems, a head-up display (HUD) or equivalent displays, EVS, SVS or CVS equipment, as applicable.

8.5 *EFB*. Instructions and training requirements for the use of the EFB, as applicable.

Note: Refer to ICAO Doc. 10020 for guidance

8.6 *Use of the Minimum Equipment and Configuration Deviation List(s)*

8.7 *Non revenue flights*. Procedures and limitations for:

(a) Training flights;

(b) Test flights;

(c) Delivery flights;

(d) Ferry flights;

(e) Demonstration flights; and

(f) Positioning flights,

including the kind of persons who may be carried on such flights.

8.8 *Oxygen Requirements*

8.8.1 An explanation of the conditions under which oxygen must be provided and used.

8.8.2 The oxygen requirements specified for:

(a) Flight crew;

(b) Cabin crew; and

(c) Passengers.

9 DANGEROUS GOODS AND WEAPONS

9.1 Information, instructions and general guidance on the transport of dangerous goods including:

(a) Operator's policy on the transport of dangerous goods;

(b) Guidance on the requirements for acceptance, labelling, handling, stowage and segregation of dangerous goods;

(c) Procedures for responding to emergency situations involving dangerous goods;

(d) Duties of all personnel involved as per OPS 3.1215; and

(e) Instructions on the carriage of the operator's employees.

9.2 The conditions under which weapons, munitions of war and sporting weapons may be carried.

10 SECURITY

10.1 Security instructions and guidance of a non-confidential nature which must include the authority and responsibilities of operations personnel. Policies and procedures for handling and reporting crime on board such as unlawful interference, sabotage, bomb threats, and hijacking must also be included.

10.2 A description of preventative security measures and training.

Note: Parts of the security instructions and guidance may be kept confidential.

11 HANDLING OF ACCIDENTS AND OCCURRENCES

Procedures for the handling, notifying and reporting occurrences. This section must include:

(a) Definitions of occurrences and of the relevant responsibilities of all persons involved;

(b) Illustrations of forms used for reporting all types of occurrences (or copies of the forms themselves), instructions on how they are to be completed, the addresses to which they should be sent and the time allowed for this to be done;

(c) In the event of an accident, descriptions of which company departments, Authorities and other organizations that have to be notified, how this will be done and in what sequence;

(d) Procedures for verbal notification to air traffic service units of incidents involving ACAS RAs, bird hazards, dangerous goods and hazardous conditions including volcanic activity;

(e) Procedures for submitting written reports on air traffic incidents, ACAS RAs, bird strikes, dangerous goods incidents or accidents, and unlawful interference;

(f) Reporting procedures to ensure compliance with OPS 3.085(b) and 3.420. These procedures must include internal safety related reporting procedures to be followed by crew members, designed to ensure that the commander is informed immediately of any incident that has endangered, or may have endangered, safety during flight and that he is provided with all relevant information.

12 RULES OF THE AIR

Rules of the Air including:

(a) Visual and instrument flight rules;

(b) Territorial application of the Rules of the Air;

(c) Communication procedures including COM-failure procedures;

(d) Information and instructions relating to the interception of civil helicopters;

(e) The circumstances in which a radio listening watch is to be maintained;

(f) Signals;

(g) Time system used in operation;

(h) ATC clearances, adherence to flight plan and position reports;

(i) Visual signals used to warn an unauthorised helicopter flying in or about to enter a restricted, prohibited or danger area;

(j) Procedures for pilots observing an accident or receiving a distress transmission;

(k) The ground/air visual codes for use by survivors, description and use of signal aids; and

(l) Distress and urgency signals.

13 LEASING

A description of the operational arrangements for leasing, associated procedures and management responsibilities.

B HELICOPTER OPERATING MATTERS – TYPE RELATED

Taking account of the differences between types, and variants of types, under the following headings:

0 GENERAL INFORMATION AND UNITS OF MEASUREMENT

0.1 General Information (e.g. helicopter dimensions), including a description of the units of measurement used for the operation of the helicopter type concerned and conversion tables.

1 LIMITATIONS

1.1 A description of the certified limitations and the applicable operational limitations including:

(a) Certification status (e.g. FAR/CS-27, FAR/CS-29, ICAO Annex 16 (CS-34 and CS-36) etc.);

(b) Passenger seating configuration for each helicopter type including a pictorial presentation;

(c) Types of operation that are approved (e.g. IFR/VFR, CAT II/III, PBN, flights in known icing conditions etc.);

(d) Crew composition;

(e) Mass and centre of gravity;

(f) Speed limitations;

(g) Flight envelope(s);

(h) Wind limits;

(i) Performance limitations for applicable configurations;

(j) Slope;

(k) Airframe contamination;

(l) System limitations.

2 EMERGENCY PROCEDURES

2.1 The emergency procedures and duties assigned to the crew, the appropriate check-lists, the system for use of the check-lists and a statement covering the necessary coordination procedures between flight and other crew members the design and utilisation of which shall observe Human Factors and CRM principles. The Standard Operating Procedures for each of the following abnormal and emergency procedures and duties must be included:

(a) Crew Incapacitation;

(b) Fire and Smoke Drills;

(c) Lightning Strikes;

(d) Distress Communications and alerting ATC to Emergencies;

(e) Engine failure;

(f) System failures;

(g) Guidance for Diversion in case of Serious Technical Failure;

(h) AVAD warning;

(i) Windshear;

(j) Emergency Landing/Ditching;

3 NORMAL PROCEDURES

3.1 The normal procedures and duties assigned to the crew, the appropriate check-lists, the system for use of the check-lists and a statement covering the necessary coordination procedures between flight and cabin crew. The Standard Operating Procedures for each of the following phases of flight and associated duties must be included:

(a) Pre-flight;

(b) Pre-departure;

(c) Altimeter setting and checking;

(d) Taxi, Take-Off and Climb;

(e) Noise abatement;

(f) Cruise and descent;

(g) Approach, Landing preparation and briefing;

(h) VFR Approach;

(i) IFR approach;

(j) Visual Approach and circling;

(k) Missed Approach;

(l) Normal Landing;

(m) Post Landing.

4 PERFORMANCE

4.0 *Performance data must be provided in a form in which it can be used without difficulty.*

4.1 *Performance data*. Performance material which provides the necessary data for compliance with the performance requirements prescribed in Subparts F, G, H and I.

4.2 If performance Data, as required for the appropriate performance class, is not available in the approved HFM, then other data acceptable to the Authority must be included. Alternatively, the Operations Manual may contain cross-reference to the approved data contained in the HFM where such data is not likely to be used often or in an emergency.

Note: The operator should issue operating instructions and provide information on helicopter climb performance with all engines operating to enable the pilot-in-command to determine the climb gradient that can be achieved during the departure phase for the existing take-off conditions and intended take-off technique.

5 MASS AND BALANCE

Instructions and data for the calculation of the mass and balance including:

(a) Calculation system (e.g. Index system);

(b) Information and instructions for completion of mass and balance documentation, including manual and computer generated types;

(c) Limiting masses and centre of gravity for the types, variants or individual helicopters used by the operator; and

(d) Dry Operating mass and corresponding centre of gravity or index.

6 LOADING

Procedures and provisions for loading and securing the load in the helicopter.

7 FLIGHT PLANNING

7.1 Data and instructions necessary for pre-flight and in-flight planning. Where applicable, procedures for engine(s) out operations and flights to isolated heliports must be included.

7.2 The method for calculating fuel needed for the various stages of flight, in accordance with OPS 3.255.

8 CONFIGURATION DEVIATION LIST

The Configuration Deviation List(s) (CDL), if provided by the manufacturer, taking account of the helicopter types and variants operated including procedures to be followed when a helicopter is being despatched under the terms of its CDL.

9 MINIMUM EQUIPMENT LIST

The Minimum Equipment List (MEL) taking account of the helicopter types and variants operated and the type(s)/area(s) of operation. The MEL must include the navigational equipment and take into account the required navigation performance for the route and area of operation.

10 SURVIVAL AND EMERGENCY EQUIPMENT INCLUDING OXYGEN

10.1 A list of the survival equipment to be carried for the routes to be flown and the procedures for checking the serviceability of this equipment prior to take-off. Instructions regarding the location, accessibility and use of survival and emergency equipment and its associated check list(s) must also be included.

10.2 The procedure for determining the amount of oxygen required and the quantity that is available. The flight profile and number of occupants.

11 EMERGENCY EVACUATION PROCEDURES

11.1 Instructions for preparation for emergency evacuation including crew co-ordination and emergency station assignment.

11.2 *Emergency evacuation procedures*. A description of the duties of all members of the crew for the rapid evacuation of a helicopter and the handling of the passengers in the event of a forced landing, ditching or other emergency.

12 HELICOPTER SYSTEMS

A description of the helicopter systems, related controls and indications and operating instructions. (See AMC Appendix 1 to OPS 3.1045.)

C ROUTE AND HELIPORT INSTRUCTIONS AND INFORMATION

1 Instructions and information relating to communications, navigation and heliport including minimum flight levels and altitudes for each route to be flown and operating minima for each heliport planned to be used, including:

(a) Minimum flight level/altitude;

(b) Operating minima for departure, destination and alternate heliports, including determination of aerodrome operating minima for instrument approaches using eligible equipment for operational credit;

(c) Communication facilities and navigation aids;

(d) FATO/runway data and heliport facilities;

(e) Approach, missed approach and departure procedures including noise abatement procedures;

(f) COM-failure procedures;

(g) Search and rescue facilities in the area over which the helicopter is to be flown;

(h) A description of the aeronautical charts that must be carried on board in relation to the type of flight and the route to be flown, including the method to check their validity;

(i) Availability of aeronautical information and MET services;

(j) En-route COM/NAV procedures.

(k) Recording and reporting by flight crew on routine meteorological observations during en-route and climb phases of the flight and special and other non-routine observations during any phase of flight. Refer to ICAO Doc.7030 or ICAO Doc.4444)

(l) Special heliport limitations (performance operating etc.).

D TRAINING

1 Training syllabi and checking programmes for all operations personnel assigned to operational duties in connection with the preparation and/or conduct of a flight as well as ground handling training requirements.

2 Training syllabi and checking programmes must include:

2.1 *For flight crew*. All relevant items prescribed in OPS 3, Subparts E and N including training for the avoidance of CFIT and the use of ACAS and GPWS and for any special approval (EFB, PBN,AWO etc.);

2.2 *For cabin crew*. All relevant items prescribed in Subpart O;

2.3 *For operations personnel concerned, including crew members:*

(a) All relevant items prescribed in OPS 3 Subpart R (Transport of Dangerous Goods by Air); and

(b) All relevant items prescribed in OPS 3, Subpart S (Security).

2.4 *For operations personnel other than crew members (e.g. dispatcher, handling personnel etc.).* All other relevant items prescribed in OPS 3 pertaining to their duties.

3 *Procedures*

3.1 Procedures for training and checking.

3.2 Procedures to be applied in the event that personnel do not achieve or maintain the required standards.

3.3 Procedures to ensure that abnormal or emergency situations requiring the application of part or all of abnormal or emergency procedures and simulation of IMC by artificial means are not simulated during commercial air transportation flights.

4 Description of documentation to be stored and storage periods. (See Appendix 1 to OPS 3.1065.)

Appendix 1 to OPS 3.1065

Document Storage Periods

The operator shall ensure that the following information/documentation is stored in an acceptable form, accessible to the Authority, for the periods shown in the Tables below.

Note: Additional information relating to maintenance records is prescribed in OPS 3.915.

Table 1 – Information used for the preparation and execution of a flight

Information used for the preparation and execution of the flight as described in OPS 3.135	
Operational flight plan	3 months
Helicopter Technical log	24 months after the date of the last entry in accordance with OPS 3.920
Route specific NOTAM/AIS briefing documentation if edited by the operator	3 months
Mass and balance documentation	3 months
Notification of special loads including written information to the commander about dangerous goods	3 months
Fuel and oil records	3 months

Table 2 – Reports

Reports	
Journey log	3 months
Flight report(s) for recording details of any occurrence, as prescribed in OPS 3.420, or any event which the commander deems necessary to report/record	3 months
Reports on exceedances of duty and/or reducing rest periods	3 months

Table 3 – Flight crew records

Flight Crew Records	
Flight, Duty and Rest time	15 months
Licence	As long as the flight crew member is exercising the privileges of the licence for the operator
Conversion training and checking	3 years
Command course (including checking)	3 years
Recurrent training and checking	3 years
Training and checking to operate in either pilot's seat	3 years
Recent experience (OPS 3.970 refers)	15 months
Route and aerodrome competence (OPS 3.975 refers)	3 years
Training and qualification for specific operations when required by OPS (e.g. HEMS CAT II/III operations)	3 years
Dangerous Goods training as appropriate	3 years

Table 4 – Cabin crew records

Cabin Crew Records	
Flight, Duty and Rest time	15 months
Initial training, conversion and differences training (including checking)	As long as the cabin crew member is employed by the operator
Recurrent training and refresher (including checking)	Until 12 months after the cabin crew member has left the employ of the operator
Dangerous Goods training as appropriate	3 years

Table 5 – Records for other operations personnel

Records for other operations personnel	
Training /qualification records of other personnel for whom an approved training programme is required by OPS	Last 2 training records

Table 6 – Other records

Other records	
Quality System records	5 years
Dangerous Goods Transport Document	3 months after completion of the flight
Dangerous Goods Acceptance Checklist	3 months after completion of the flight

SUBPART Q

FLIGHT/DUTY TIME AND REST REQUIREMENTS

OPS 3.1090 Objective and Scope

(a) The operator shall establish a flight and duty time limitations and rest scheme (FTL) for crew members.

(b) The operator shall ensure that for all its flights:

(1) The flight and duty time limitations and rest scheme is in accordance with both;

(i) the provisions of this Subpart; and

(ii) any additional provisions that are applied by the Authority in accordance with the provisions of this Subpart for the purpose of maintaining safety.

(2) Flights are planned to be completed within the allowable flight duty period taking into account the time necessary for pre-flight duties, the flight and turn-around times.

(3) Duty rosters will be prepared and published sufficiently in advance to provide the opportunity for crew members to plan adequate rest.

(c) Operators' responsibilities

(1) The operator shall nominate a home base for each crew member.

(2) Operators shall be expected to appreciate the relationship between the frequencies and pattern of flight duty periods and rest periods and give due consideration to the cumulative effects of undertaking long duty hours interspersed with minimum rest.

(3) Operators shall allocate duty patterns which avoid such undesirable practices as alternating day/night duties or the positioning of crew members so that a serious disruption of established sleep/work pattern occurs.

(4) Operators shall plan local days free of duty and notify crew members in advance.

(5) Operators shall ensure that rest periods provide sufficient time to enable crew to overcome the effects of the previous duties and to be well rested by the start of the following flight duty period.

(6) Operators shall ensure flight duty periods are planned to enable crew members to remain sufficiently free from fatigue so they can operate to a satisfactory level of safety under all circumstances.

(d) Crew members' responsibilities

(1) A crew member shall not operate a helicopter if he/she knows that he/she is suffering from or is likely to suffer from fatigue or feels unfit, to the extent that the flight may be endangered.

(2) Crew members should make optimum use of the opportunities and facilities for rest provided and plan and use their rest periods properly.

(e) Responsibilities of Authority

The Authority has established the following regulations for the purpose of managing fatigue. These regulations are based upon scientific principles and knowledge, with the aim of ensuring that flight and cabin crew members are performing at an adequate level of alertness.

(f) Variations

(1) The Authority may grant variations to the requirements in this Subpart in accordance with applicable laws and procedures and in consultation with interested parties.

(2) Each operator will have to demonstrate to the Authority, using operational experience and taking into account other relevant factors such as current scientific knowledge, that its request for a variation produces an equivalent level of safety. Such variations will be accompanied with suitable mitigation measures where appropriate.

OPS 3.1095 Definitions

For the purposes of this Regulation, the following definitions shall apply:

Augmented flight crew:

A flight crew which comprises more than the minimum number required for the operation of the helicopter and in which each flight crew member can leave his/her post and be replaced by another appropriately qualified flight crew member.

Block time:

The total time from the moment a helicopter's rotor blades start turning until the moment the helicopter finally comes to rest at the end of the flight and the rotor blades are stopped.

Break:

A period free of all duties, which counts as duty, being less than a rest period.

Duty:

Any task that a crew member is required to carry out associated with the business of an AOC holder. Unless where specific rules are provided for by this Regulation, the Authority shall define whether and to what extent standby is to be accounted for as duty.

Duty period:

A period which starts when a crew member is required by the operator to commence a duty and ends when the crew member is free from all duties.

Flight duty period:

A flight duty period (FDP) is any time during which a person operates in an aircraft as a member of its crew. The FDP starts when the crew member is required by the operator to report for a flight or a series of flights; it finishes at the end of the last flight on which he/she is an operating crew member.

Home base:

The location nominated by the operator to the crew member from where the crew member normally starts and ends a duty period or a series of duty periods and where, under normal conditions, the operator is not responsible for the accommodation of the crew member concerned.

Local day:

A 24 hour period commencing at 00.00 local time.

Local night:

A period of eight hours falling between 22.00 and 08.00 local time.

A single day free of duty:

A single day free of duty shall include two local nights. A rest period may be included as part of the day off.

Operating crew member:

A crew member who carries out his/her duties in an aircraft during a flight or during any part of a flight.

Positioning:

The transferring of a non-operating crew member from place to place, at the behest of the operator, excluding travelling time. Travelling time is defined as:

— time from home to a designated reporting place and vice versa,

— time for local transfer from a place of rest to the commencement of duty and vice versa.

Rest period:

An uninterrupted and defined period of time during which a crew member is free from all duties and airport standby.

Standby:

A defined period of time during which a crew member is required by the operator to be available to receive an assignment for a flight, positioning or other duty without an intervening rest period.

Window of Circadian Low (WOCL):

The Window of Circadian Low (WOCL) is the period between 02.00 and 05.59. Within a band of three time zones the WOCL refers to home base time. Beyond these three time zones the WOCL refers to home base time for the first 48 hours after departure from home base time zone, and to local time thereafter.

OPS 3.1100 Flight and Duty Limitations

(a) Cumulative duty hours

The operator shall ensure that the total duty periods to which a crew member is assigned do not exceed:

(1) 190 duty hours in any 28 consecutive days, spread as evenly as practicable throughout this period; and

(2) 60 duty hours in any seven consecutive days.

(b) Limit on total block times

The operator shall ensure that the total block times of the flights on which an individual crew member is assigned as an operating crew member does not exceed

(1) 900 block hours in a calendar year;

(2) 100 block hours in any 28 consecutive days.

OPS 3.1105 Maximum Daily Flight Duty Period (FDP)

(a) Except for single-pilot operations and to emergency medical service operations;

(1) The operator shall specify reporting times that realistically reflect the time for safety-related ground duties as approved by the Authority.

(2) The maximum basic daily FDP is 13 hours.

(3) These 13 hours will be reduced by 30 minutes for each sector from the third sector onwards with a maximum total reduction of two hours.

(4) When the FDP starts in the WOCL, the maximum stated in point 1.3 and point 1.4 will be reduced by 100 % of its encroachment up to a maximum of two hours. When the FDP ends in or fully encompasses the WOCL, the maximum FDP stated in point 1.3 and point 1.4 will be reduced by 50 % of its encroachment.

(b) Extensions:

(1) The maximum daily FDP can be extended by up to one hour.

(2) Extensions are not allowed for a basic FDP of six sectors or more.

(3) Where an FDP encroaches on the WOCL by up to two hours extensions are limited to up to four sectors.

(4) Where an FDP encroaches on the WOCL by more than two hours extensions are limited to up to two sectors.

(5) The maximum number of extensions is two in any seven consecutive days.

(6) Where an FDP is planned to use an extension pre and post flight minimum rest is increased by two hours or post flight rest only is increased by four hours. Where the extensions are used for consecutive FDPs the pre and post rest between the two operations shall run consecutively.

(7) When an FDP with extension starts in the period 22.00 to 04.59 the operator will limit the FDP to 11.45.

(c) Cabin Crew

For cabin crew being assigned to a flight or series of flights, the FDP of the cabin crew may be extended by the difference in reporting time between cabin crew and flight crew, as long as the difference does not exceed one hour.

(d) Operational Robustness

Planned schedules must allow for flights to be completed within the maximum permitted flight duty period. To assist in achieving this operators will take action to change a schedule or crewing arrangements at the latest where the actual operation exceeds the maximum FDP on more than 33 % of the flights in that schedule during a scheduled seasonal period.

(e) Positioning

(1) All the time spent on positioning is counted as duty.

(2) Positioning after reporting but prior to operating shall be included as part of the FDP but shall not count as a sector.

(3) A positioning sector immediately following operating sector will be taken into account for the calculation of minimum rest as defined in OPS 3.1110 points 1.1 and 1.2 below.

(f) Extended FDP (split duty)

(1) The Authority may grant approval to an operation based on an extended FDP which includes a break.

(2) Each operator will have to demonstrate to the Authority, using operational experience and taking into account other relevant factors, such as current scientific knowledge, that its request for an extended FDP produces an equivalent level of safety.

OPS 3.1110 Rest

(a) Minimum rest

(1) The minimum rest which must be provided before undertaking a flight duty period starting at home base shall be at least as long as the preceding duty period or 12 hours whichever is the greater;

(2) The minimum rest which must be provided before undertaking a flight duty period starting away from home base shall be at least as long as the preceding duty period or 10 hours whichever is the greater; when on minimum rest away from home base, the operator must allow for an eight hour sleep opportunity taking due account of travelling and other physiological needs;

(3) The operator will ensure that effects on crew members of time zone differences will be compensated by additional rest, as regulated by the Authority.

(4) Notwithstanding (1) and (2), the Authority may grant reduced rest arrangements. Each operator will have to demonstrate to the Authority, using operational experience and taking into account other relevant factors, such as current scientific knowledge, that its request for reduced rest arrangements produces an equivalent level of safety.

(b) Rest periods

The operator shall ensure that the minimum rest provided as outlined above is increased periodically to a weekly rest period, being a 36-hour period including two local nights, such that there shall never be more than 168 hours between the end of one weekly rest period and the start of the next. As an exception to OPS 3.1095 point 1.9, the Authority may decide that the second of those local nights may start from 20:00 hours if the weekly rest period has a duration of at least 40 hours.

OPS 3.1115 Extension of Flight Duty Period due to In-flight Rest

(a) Extension of flight duty period due to in-flight rest may be granted by the Authority providing each operator demonstrates to the Authority, using operational experience and taking into account other relevant factors such as current scientific knowledge, that its request produces an equivalent level of safety:

(b) The Authority shall set the requirements in connection with the augmentation of a basic flight crew for the purpose of extending the flight duty period beyond the limits in OPS 3.1105 above.

(c) The Authority shall set the requirements in connection with the minimum in-flight rest by cabin crew member(s) when the FDP goes beyond the limitations in OPS 3.1105 above.

OPS 3.1120 Unforeseen Circumstances in Actual Flight Operations — Commander's Discretion

(a) Taking into account the need for careful control of these instances implied underneath, during the actual flight operation, which starts at the reporting time, the limits on flight duty, duty and rest periods prescribed in this Subpart may be modified in the event of unforeseen circumstances. Any such modifications must be acceptable to the commander after consultation with all other crew members and must, in all circumstances, comply with the following:

(1) The maximum FDP referred to in OPS 3.1105 point 1.3 above may not be increased by more than two hours unless the flight crew has been augmented, in which case the maximum flight duty period may be increased by not more than three hours;

(2) If on the final sector within a FDP unforeseen circumstances occur after take-off that will result in the permitted increase being exceeded, the flight may continue to the planned destination or alternate;

(3) In the event of such circumstances, the rest period following the FDP may be reduced but never below the minimum rest defined in OPS 3.1110 (a)(2) of this Subpart;

(b) The commander shall, in case of special circumstances, which could lead to severe fatigue, and after consultation with the crew members affected, reduce the actual flight duty time and/or increase the rest time in order to eliminate any detrimental effect on flight safety;

(c) The operator shall ensure that:

(1) The commander submits a report to the operator whenever a FDP is increased by his/her discretion or when a rest period is reduced in actual operation and

(2) Where the increase of a FDP or reduction of a rest period exceeds one hour, a copy of the report, to which the operator must add his comments, is sent to the Authority no later than 28 days after the event.

OPS 3.1125 Standby

(a) Heliport (airport) standby

(1) A crew member is on heliport standby from reporting at the normal report point until the end of the notified standby period.

(2) Airport standby will count in full for the purposes of cumulative duty hours.

(3) Where heliport standby is utilised the assigned flight duty shall be defined by the Authority. In such a case, heliport standby shall be added to the duty period referred to in OPS 3.1110 under points (a)(1)and (2) for the purposes of calculating minimum rest.

(4) Where the heliport standby does not lead to assignment on a flight duty, it shall be followed at least by a rest period as regulated by the Authority.

(5) While on heliport standby the operator will provide to the crew member a quiet and comfortable place not open to the public.

(b) Other forms of standby (including standby at hotel) shall be regulated by the Authority, taking into account the following:

(1) All activity shall be rostered and/or notified in advance.

(2) The start and end time of the standby shall be defined and notified in advance.

(3) The maximum length of any standby at a place other than a specified reporting point shall be determined.

(4) Taking into account facilities available for the crew member to rest and other relevant factors, the relationship between the standby and any assigned flight duty resulting from the standby shall be defined.

(5) The counting of standby times for the purposes of cumulative duty hours shall be defined.

OPS 3.1130 Nutrition

A meal and drink opportunity must occur in order to avoid any detriment to a crew member’s performance, especially when the FDP exceeds six hours.

OPS 3.1135 Flight Duty, Duty and Rest Period Records

(a) The operator shall ensure that crew member’s records include:

(1) block times;

(2) start, duration and end of each duty or flight duty periods;

(3) rest periods and days free of all duties;

and are maintained to ensure compliance with the requirements of this Subpart; copies of these records will be made available to the crew member upon request.

(b) If the records held by the operator under paragraph (a) do not cover all of his/her flight duty, duty and rest periods, the crew member concerned shall maintain an individual record of his/her:

(1) block times;

(2) start, duration and end of each duty or flight duty periods; and

(3) rest periods and days free of all duties.

(c) A crew member shall present his/her records on request to any operator who employs his/her services before he/she commences a flight duty period.

(d) Records shall be preserved for at least 15 calendar months from the date of the last relevant entry.

(e) Additionally, operators shall separately retain all Commander's discretion reports of extended flight duty periods, extended flight hours and reduced rest periods for at least three months after the event.

OPS 3.1140 Fatigue Management
(See Appendix 1 to OPS 3.1140)

(a) The Authority has established FRMS regulations to authorise the operator to use a Fatigue Risk Management System (FRMS) to manage fatigue with the aim of ensuring that flight and cabin crew members are performing at an adequate level of alertness.

(b) The Authority shall require that the operator, for the purposes of managing its fatigue-related safety risks, establish either:

(1) flight time, flight duty period, duty period and rest period limitations that are within the prescriptive fatigue management regulations stated in this Subpart; or

(2) a Fatigue Risk Management System (FRMS) for all operations; or

(3) a FRMS for a defined part of its operations with the remainder of its operations in compliance with the prescriptive fatigue management regulations stated in this Subpart.

(c) The operator shall maintain records of flight time, flight duty periods, duty periods, and rest periods for all its flight and cabin crew members for a period of time specified in Appendix 1 to OPS 3.1065.

(d) Where the operator complies with prescriptive fatigue management regulations in the provision of part or all of its services, the Authority;

(1) shall require that the operator familiarize those personnel involved in managing fatigue with their responsibilities and the principles of fatigue management;

(2) may approve, in exceptional circumstances, variations to these regulations on the basis of a risk assessment provided by the operator. Approved variations shall provide a level of safety equivalent to, or better than that achieved through the prescriptive fatigue management regulations.

(e) Where the operator implements an FRMS to manage fatigue-related safety risks in the provision of part or all of its services, the Authority shall:

(1) require the operator to have processes to integrate FRMS functions with its other safety management functions;

(2) require that the operator establish maximum values for flight times, flight duty periods and duty periods, and minimum values for rest periods; and

(3) approve the operator's FRMS before it may take the place of any or all of the prescriptive fatigue management regulations. An approved FRMS shall provide a level of safety equivalent to, or better than, the prescriptive fatigue management regulations of this Subpart.

Appendix 1 to OPS 3.1140

Fatigue Risk Management System Requirements

A Fatigue Risk Management System (FRMS) shall contain, as a minimum:

1. FRMS Policy and Documentation

1.1 FRMS policy

1.1.1 The operator shall define its FRMS policy, with all elements of the FRMS clearly identified.

1.1.2 The policy shall require that the scope of the FRMS be clearly defined in the operations manual.

1.1.3 The policy shall:

(a) reflect the shared responsibility of management, flight and cabin crews, and other involved personnel;

(b) clearly state the safety objectives of the FRMS;

(c) be signed by the accountable executive of the organisation;

(d) be communicated, with visible endorsement, to all the relevant areas and levels of the organisation;

(e) declare management commitment to effective safety reporting;

(f) declare management commitment to the provision of adequate resources for the FRMS;

(g) declare management commitment to continuous improvement of the FRMS;

(h) require that clear lines of accountability for management, flight and cabin crews, and all other involved personnel be identified; and

(i) require periodic reviews to ensure it remains relevant and appropriate.

1.2 FRMS documentation

The operator shall develop and keep current FRMS documentation that describes and records:

(a) FRMS policy and objectives;

(b) FRMS processes and procedures;

(c) accountabilities, responsibilities and authorities for these processes and procedures;

(d) mechanisms for ongoing involvement of management, flight and cabin crew members, and all other involved personnel;

(e) FRMS training programmes, training requirements and attendance records;

(f) scheduled and actual flight times, flight duty periods, duty periods and rest periods with significant deviations and reasons for deviations noted; and

(g) FRMS outputs including findings from collected data, recommendations, and actions taken.

2. Fatigue Risk Management Processes

2.1 Identification of hazards

The operator shall develop and maintain three fundamental and documented processes for fatigue hazard identification:

2.1.1 Predictive

The predictive process shall identify fatigue hazards taking into account factors known to affect sleep and fatigue and their effects on performance. Methods of examination may include but are not limited to:

(a) operator or industry operational experience and data collected on similar types of operations;

(b) evidence-based scheduling practices; and

(c) bio-mathematical models.

2.1.2 Proactive

The proactive process shall identify fatigue hazards within current flight operations. Methods of examination may include but are not limited to:

(a) self-reporting of fatigue risks;

(b) crew fatigue surveys;

(c) relevant flight and cabin crew performance data;

(d) available safety databases and scientific studies; and

(e) analysis of planned versus actual time worked.

2.1.3 Reactive

The reactive process shall identify the contribution of fatigue hazards to reports and events associated with potential negative safety consequences in order to determine how the impact of fatigue could have been minimised. As a minimum, the process should be triggered by any of the following:

(a) fatigue reports;

(b) confidential reports;

(c) audit reports;

(d) incidents; and

(e) flight data analysis events.

2.2 Risk assessment

2.2.1 The operator shall develop and implement risk assessment procedures that determine the probability and potential severity of fatigue-related events and identify when the associated risks require mitigation.

2.2.2 The risk assessment procedures shall review identified hazards and link them to:

(a) operational processes;

(b) their probability;

(c) possible consequences; and

(d) the effectiveness of existing safety barriers and controls. 46

2.3 Risk mitigation

The operator shall develop and implement risk mitigation procedures that:

(a) select the appropriate mitigation strategies;

(b) implement the mitigation strategies; and

(c) monitor the strategies' implementation and effectiveness.

3. FRMS Safety Assurance Processes

The operator shall develop and maintain FRMS safety assurance processes to:

(a) provide for continuous FRMS performance monitoring, analysis of trends, and measurement to validate the effectiveness of the fatigue safety risk controls. The sources of data may include, but are not limited to:

(1) hazard reporting and investigations;

(2) audits and surveys; and

(3) reviews and fatigue studies;

(b) provide a formal process for the management of change which shall include but is not limited to:

(1) identification of changes in the operational environment that may affect FRMS;

(2) identification of changes within the organisation that may affect FRMS; and

(3) consideration of available tools which could be used to maintain or improve FRMS performance prior to implementing changes; and

(c) provide for the continuous improvement of the FRMS. This shall include but is not limited to:

(1) the elimination and/or modification of risk controls that have had unintended consequences or that are no longer needed due to changes in the operational or organisational environment;

(2) routine evaluations of facilities, equipment, documentation and procedures; and

(3) the determination of the need to introduce new processes and procedures to mitigate emerging fatigue-related risks.

4. FRMS Promotion Processes

FRMS promotion processes support the ongoing development of the FRMS, the continuous improvement of its overall performance, and attainment of optimum safety levels. The following shall be established and implemented by the operator as part of its FRMS:

(a) training programmes to ensure competency commensurate with the roles and responsibilities of management, flight and cabin crew, and all other involved personnel under the planned FRMS; and

(b) an effective FRMS communication plan that:

(1) explains FRMS policies, procedures and responsibilities to all relevant stakeholders; and

(2) describes communication channels used to gather and disseminate FRMS-related information.

SUBPART R

TRANSPORT OF DANGEROUS GOODS BY AIR

OPS 3.1145 Approval Requirement

(See AC OPS 3.1145)
(See AMC OPS 3.1145)

The operator shall not transport dangerous goods unless issued a specific approval for the transport of dangerous goods by the Authority.

Note 1: This Subpart shall also apply to the carriage of dangerous goods on domestic commercial air transport operations

Note 2: The carriage of dangerous goods must be included in the scope of the operator's safety management system (SMS).

OPS 3.1150 Terminology

Note: Refer to CAR DG for all definitions related to dangerous goods as well as CAR DEF.

OPS 3.1155 Operators with a Specific Approval for the Transport of Dangerous Goods as Cargo

(See AMC OPS 3.1155)

The Authority, as the State of the Operator, shall issue a specific approval for the transport of dangerous goods and ensure that the operator:

(a) establishes a dangerous goods training programme that meets the requirements in the Technical Instructions, Part 1;4, and the requirements of CAR DG, and OPS 3.1220 as appropriate. Details of the dangerous goods training programme shall be included in the operator's operations manuals;

(b) establishes dangerous goods policies and procedures in its operations manual to meet, at a minimum, the requirements of Annex 18, the Technical Instructions and CAR DG to enable operator personnel to:

(1) identify and reject undeclared or mis-declared dangerous goods in cargo or mail, including COMAT classified as dangerous goods;

Note: COMAT that meets the classification criteria of dangerous goods, and which is transported in accordance with Part 1;2.2.2, Part 1;2.2.3 or Part 1;2.2.4 of the Technical Instructions, are considered as "cargo" (e.g., aircraft parts such as chemical oxygen generators, fuel control units, fire extinguishers, oils, lubricants and cleaning products).

(2) report to the appropriate authorities of the State of the Operator, and the State in which it occurred, any:

(i) occasions when undeclared or mis-declared dangerous goods are discovered in cargo or mail; and

(ii) dangerous goods accidents and incidents;

(3) report to the appropriate authorities of the State of the Operator any occasions when dangerous goods are discovered to have been carried:

(i) when not loaded, segregated, separated or secured in accordance with the Technical Instructions, Part 7;2; and

(ii) without information having been provided to the pilot-in-command;

(4) accept, handle, store, transport, load and unload dangerous goods, including COMAT classified as dangerous goods as cargo on board an aircraft; and

(5) provide the pilot-in-command with accurate and legible written or printed information concerning dangerous goods that are to be carried as cargo;

(i) for helicopter operations, with the approval of the Authority, the information provided to the pilot-in-command may be abbreviated or briefed by other means (e.g., radio communication, as part of the working flight documentation such as a journey log or operational flight plan) where circumstances make it impractical to produce written or printed information or a dedicated form (see Part S-7;4.8 of the Supplement to the Technical Instructions).

OPS 3.1157 Operators with No Specific Approval for the Transport of Dangerous Goods as Cargo

Operators with no specific approval to transport dangerous goods shall have:

(a) established a dangerous goods training programme that meets the requirements of Annex 18, the applicable requirements of the Technical Instructions, Part 1, Chapter 4, OPS 3.1220 and the requirements of CAR DG, as appropriate. Details of the dangerous goods training programme shall be included in the operator's operations manuals;

(b) established dangerous goods policies and procedures in its operations manual to meet, at a minimum, the requirements of Annex 18, the Technical Instructions and CAR DG to allow operator personnel to:

(1) identify and reject undeclared dangerous goods, including COMAT classified as dangerous goods; and

Note: COMAT that meets the classification criteria of dangerous goods, and which is transported in accordance with Part 1;2.2.2, Part 1;2.2.3 or Part 1;2.2.4 of the Technical Instructions, are considered as "cargo" (e.g., aircraft parts such as chemical oxygen generators, fuel control units, fire extinguishers, oils, lubricants and cleaning products).

(2) report to the appropriate authorities of the State in which it occurred and the Authority any:

(i) occasions when undeclared dangerous goods are discovered in cargo or mail; and

(ii) dangerous goods accidents and incidents.

OPS 3.1160 Scope

(a) The operator shall comply with the provisions contained in the Technical Instructions on all occasions when dangerous goods are carried, irrespective of whether the flight is wholly or partly within or wholly outside the territory of a State. (See AMC OPS 3.1160(a))

(b) Articles and substances which would otherwise be classed as dangerous goods are excluded from the provisions of this Subpart, to the extent specified in the Technical Instructions, provided:

(1) They are required to be aboard the helicopter in accordance with the relevant CARs or for operating reasons (see AMC OPS 3.1160(b)(1));

(2) They are carried as catering or cabin service supplies;

(3) They are carried for use in flight as veterinary aid or as a humane killer for an animal (see AMC OPS 3.1160(b)(3));

(4) They are carried for use in flight for medical aid for a patient, provided that (see AMC OPS 3.1160(b)(4)):

(i) Gas cylinders have been manufactured specifically for the purpose of containing and transporting that particular gas;

(ii) Drugs, medicines and other medical matter are under the control of trained personnel during the time when they are in use in the helicopter;

(iii) Equipment containing wet cell batteries is kept and, when necessary secured, in an upright position to prevent spillage of the electrolyte; and

(iv) Proper provision is made to stow and secure all the equipment during take-off and landing and at all other times when deemed necessary by the commander in the interests of safety; or

(5) They are carried by passengers or crew members (see AMC OPS 3.1160(b)(5)).

(c) Articles and substances intended as replacements for those in (b)(1) and (b)(2) above shall be transported on a helicopter as specified in the Technical Instructions.

OPS 3.1165 Limitations on the Transport of Dangerous Goods

(a) The operator shall take all reasonable measures to ensure that articles and substances that are specifically identified by name or generic description in the Technical Instructions as being forbidden for transport under any circumstances are not carried on any helicopter.

(b) The operator shall take all reasonable measures to ensure that articles and substances or other goods that are identified in the Technical Instructions as being forbidden for transport in normal circumstances are only transported when:

(1) They are exempted by the States concerned under the provisions of the Technical Instructions (see AMC OPS 3.1165(b)(1)); or

(2) The Technical Instructions indicate they may be transported under an approval issued by the State of Origin.

OPS 3.1170 Classification

The operator shall take all reasonable measures to ensure that articles and substances are classified as dangerous goods as specified in the Technical Instructions.

OPS 3.1175 Packing
(See AMC OPS 3.1175)

The operator shall take all reasonable measures to ensure that dangerous goods are packed as specified in the Technical Instructions or in a way which will provide an equivalent level of safety subject to the approval of the Authority.

OPS 3.1180 Labelling and Marking

(a) The operator shall take all reasonable measures to ensure that packages, overpacks and freight containers are labelled as specified in the Technical Instructions.

(b) The operator shall take all reasonable measures to ensure packages, overpacks and freight containers are marked as specified in the Technical Instructions or as specified by the Authority. (See AMC OPS 3.1180(b).)

(c) Where dangerous goods are carried on a flight which takes place wholly or partly outside the territory of a State, labelling and marking must be in the English language in addition to any other language requirements.

OPS 3.1185 Dangerous Goods Transport Document

(a) The operator shall ensure that, except when otherwise specified in the Technical Instructions, dangerous goods are accompanied by a dangerous goods transport document.

(b) Where dangerous goods are carried on a flight which takes place wholly or partly outside the territory of a State, the English language must be used for the dangerous goods transport document in addition to any other language requirements.

OPS 3.1195 Acceptance of Dangerous Goods

(a) The operator shall not accept dangerous goods for transport until the package, overpack or freight container has been inspected in accordance with the acceptance procedures in the Technical Instructions.

(b) The operator or his handling agent shall use an acceptance check list. The acceptance check list shall allow for all relevant details to be checked and shall be in such form as will allow for the recording of the results of the acceptance check by manual, mechanical or computerised means.

OPS 3.1200 Inspection for Damage, Leakage or Contamination

(a) The operator shall ensure that:

(1) Packages, overpacks and freight containers are inspected for evidence of leakage or damage immediately prior to loading on a helicopter, as specified in the Technical Instructions;

(2) Leaking or damaged packages, overpacks or freight containers are not loaded on a helicopter;

(3) Any package of dangerous goods found on a helicopter and which appears to be damaged or leaking is removed or arrangements made for its removal by an appropriate authority or organisation. In this case the remainder of the consignment shall be inspected to ensure it is in a proper condition for transport and that no damage or contamination has occurred to the helicopter or its load; and

(4) Packages, overpacks and freight containers are inspected for signs of damage or leakage upon unloading from a helicopter and, if there is evidence of damage or leakage, the area where the dangerous goods were stowed is inspected for damage or contamination.

OPS 3.1205 Removal of Contamination

(a) The operator shall ensure that:

(1) Any contamination found as a result of the leakage or damage of dangerous goods is removed without delay; and

(2) A helicopter which has been contaminated by radioactive materials is immediately taken out of service and not returned until the radiation level at any accessible surface and the non-fixed contamination are not more than the values specified in the Technical Instructions.

OPS 3.1210 Loading Restrictions
(See AMC OPS 3.1210(a))

(a) *Passenger Cabin, Flight Deck and Cargo Compartments*. The operator shall ensure that dangerous goods are loaded, segregated, stowed, secured and carried in a helicopter as specified in the Technical Instructions or as approved by the Authority.

(b) *Dangerous Goods Designated for Carriage Only on Cargo Aircraft*. The operator shall ensure that packages of dangerous goods bearing the 'Cargo Aircraft Only' label are carried on a cargo aircraft and loaded as specified in the Technical Instructions.

(c) Packages or overpacks of dangerous goods bearing the “cargo aircraft only” label shall be loaded on a helicopter performing cargo only operations in accordance with Part 7, Chapter 2, Section 4.1 of the Technical Instructions.

OPS 3.1213 Dispensing or Expending of Dangerous Goods from Helicopters

Note: These provisions refer to operations where dangerous goods are carried on helicopters with the intent to dispense the items in flight (e.g., for the purpose of avalanche control).

(a) Each operator shall prepare and keep current a manual containing operational guidelines and handling procedures for the use and guidance of flight, maintenance and ground personnel concerned in the dispensing or expending of dangerous goods.

(b) No person, other than a required flight crew member, or person necessary for handling or dispensing the dangerous goods, shall be carried on the aircraft.

(c) The operator of the aircraft shall have prior permission for the dispensing or expending of dangerous goods from the owners of any airport to be used.

OPS 3.1215 Provision of Information

(a) *Information – General.* The operator shall ensure that all personnel, including third-party personnel, involved in the acceptance, handling, loading and unloading of cargo are informed of the operator's specific approval and limitations with regard to the transport of dangerous goods.

(b) *Information to Ground Staff*. The operator shall ensure that:

(1) Information is provided to enable ground staff to carry out their duties with regard to the transport of dangerous goods, including the actions to be taken in the event of incidents and accidents involving dangerous goods; and

(2) Where applicable, the information referred to in sub-paragraph (a)(1) above is also provided to his handling agent.

(c) *Information to Passengers and Other Persons* (see AMC OPS 3.1215(b))

(1) The operator shall ensure that information is promulgated as required by the Technical Instructions so that passengers are warned as to the types of goods which they are forbidden from transporting aboard a helicopter; and

(2) The operator and, where applicable, his handling agent shall ensure that notices are provided at acceptance points for cargo giving information about the transport of dangerous goods.

(d) *Information to Crew Members*. The operator shall ensure that information is provided in the Operations Manual to enable crew members to carry out their responsibilities in regard to the transport of dangerous goods, including the actions to be taken in the event of emergencies arising involving dangerous goods.

(e) *Information to the Commander*. The operator shall ensure that the commander is provided with written information, as specified in the Technical Instructions (See Table 1 of Appendix 1 to OPS 3.1065 for the document storage period).

(f) *Information in the Event of a helicopter Incident or Accident* (See AMC OPS 3.1215(e))

(1) The operator of a helicopter which is involved in a helicopter incident shall, on request, provide any information required to minimise the hazards created by any dangerous goods carried.

(2) The operator of a helicopter which is involved in a helicopter accident shall, as soon as possible, inform the appropriate authority of the State in which the helicopter accident occurred of any dangerous goods carried.

OPS 3.1220 Training Programmes
(See AMC OPS 3.1220)
(See AMC OPS 3.1220)

(a) The operator shall establish and maintain staff training programmes, as required by the Technical Instructions, which shall be approved by the Authority.

(b) *Operators not holding a permanent approval to carry dangerous goods*. The operator shall ensure that:

(1) Staff who are engaged in general cargo and baggage handling have received training to carry out their duties in respect of dangerous goods. As a minimum this training must cover the areas identified in Column 1 of Table 1 and be to a depth sufficient to ensure that an awareness is gained of the hazards associated with dangerous goods, how to identify them and what requirements apply to the carriage of such goods by passengers; and

(2) The following personnel:

(i) Crew members;

(ii) Passenger handling staff; and

(iii) Security staff employed by the operator who deal with the screening of passengers and their baggage, have received training which, as a minimum, must cover the areas identified in Column 2 of Table 1 and be to a depth sufficient to ensure that an awareness is gained of the hazards associated with dangerous goods, how to identify them and what requirements apply to the carriage of such goods by passengers.

Table 1

AREAS OF TRAINING	1	2
General philosophy	X	X
Limitations on Dangerous Goods in air transport		X
Package marking and labelling	X	X
Dangerous Goods in passengers baggage	X	X
Emergency procedures	X	X

Note: 'X' indicates an area to be covered.

(c) *Operators holding a permanent approval to carry dangerous goods*. The operator shall ensure that:

(1) Staff who are engaged in the acceptance of dangerous goods have received training and are qualified to carry out their duties. As a minimum this training must cover the areas identified in Column 1 of Table 2 and be to a depth sufficient to ensure the staff can take decisions on the acceptance or refusal of dangerous goods offered for carriage by air;

(2) Staff who are engaged in ground handling, storage and loading of dangerous goods have received training to enable them to carry out their duties in respect of dangerous goods. As a minimum this training must cover the areas identified in Column 2 of Table 2 and be to a depth sufficient to ensure that an awareness is gained of the hazards associated with dangerous goods, how to identify such goods and how to handle and load them;

(3) Staff who are engaged in general cargo and baggage handling have received training to enable them to carry out their duties in respect of dangerous goods. As a minimum this training must cover the areas identified in Column 3 of Table 2 and be to a depth sufficient to ensure that an awareness is gained of the hazards associated with dangerous goods, how to identify such goods, how to handle and load them and what requirements apply to the carriage of such goods by passengers;

(4) Flight crew members have received training which, as a minimum, must cover the areas identified in Column 4 of Table 2. Training must be to a depth sufficient to ensure that an awareness is gained of the hazards associated with dangerous goods and how they should be carried on a helicopter; and

(5) The following personnel:

(i) Passenger handling staff;

(ii) Security staff employed by the operator who deal with the screening of passengers and their baggage; and

(iii) Crew members other than flight crew members, have received training which, as a minimum, must cover the areas identified in Column 5 of Table 2. Training must be to a depth sufficient to ensure that an awareness is gained of the hazards associated with dangerous goods and what requirements apply to the carriage of such goods by passengers or, more generally, their carriage on a helicopter.

Table 2

AREAS OF TRAINING	1	2	3	4	5
Limitations on Dangerous Goods in air transport	X	X		X	X
Classification of Dangerous Goods	X				
List of Dangerous Goods	X	X		X	
Packaging specifications and markings	X				
Storage and loading procedures	X	X	X	X	
Dangerous Goods in passengers baggage	X		X	X	X
Emergency procedures	X	X	X	X	X

Note: 'X' indicates an area to be covered.

(d) The operator shall ensure that all staff who receive training undertake a test to verify understanding of their responsibilities.

(e) The operator shall ensure that all staff who require dangerous goods training receive recurrent training at intervals of no longer than 2 years.

(f) The operator shall ensure that records of dangerous goods training are maintained for all staff trained in accordance with sub-paragraph (d) above.

(g) The operator shall ensure that his handling agent's staff members are trained in accordance with the applicable column of Table 1 or Table 2.

OPS 3.1225 Dangerous Goods Incident and Accident Reports
(See AMC OPS 3.1225)

(a) The operator shall report dangerous goods incidents and accidents to the Authority. An initial report shall be despatched within 72 hours of the event unless exceptional circumstances prevent this.

(b) The operator shall also report to the Authority undeclared or mis-declared dangerous goods discovered in cargo or passengers' baggage. An initial report shall be despatched within 72 hours of the discovery unless exceptional circumstances prevent this.

SUBPART S

SECURITY

OPS 3.1235 Security Requirements

The operator shall ensure that all appropriate personnel are familiar, and comply, with the relevant requirements of the national security programmes of the State of the operator.

OPS 3.1240 Training Programmes

(a) The operator shall establish, maintain and conduct approved training programmes which enable the operator's personnel to take appropriate action to prevent acts of unlawful interference such as sabotage or unlawful seizure of helicopters and to minimise the consequences of such events should they occur.

(b) The operator shall also establish and maintain a training programme to acquaint appropriate employees with preventive measures and techniques in relation to passengers, baggage, cargo, mail, equipment, stores and supplies intended for carriage on a helicopter so that they contribute to the prevention of acts of sabotage or other forms of unlawful interference.

OPS 3.1245 Reporting Acts of Unlawful Interference

Following an act of unlawful interference on board a helicopter the commander or, in his absence the operator, shall submit, without delay, a report of such an act to the designated local authority and the Authority in the State of the Operator.

OPS 3.1250 Helicopter Search Procedure Checklist

The operator shall ensure that all helicopters carry a checklist of the procedures to be followed for that type in searching for concealed weapons, explosives, or other dangerous devices. The operator shall also support the checklist with guidance on the course of action to be taken should a bomb or suspicious object be found.

OPS 3.1255 Flight Crew Compartment Security

If installed, the flight crew compartment door on all helicopters operated for the purpose of carrying passengers shall be capable of being locked from within the compartment in order to prevent unauthorised access.

SECTION 2

ADVISORY CIRCULARS (AC) AND ACCEPTABLE MEANS OF COMPLIANCE (AMC)

1 *GENERAL*

1.1 This Section contains Advisory Circulars (AC) and Acceptable Means of Compliance (AMC) that has been agreed for inclusion in OPS 3.

1.2 Where a particular OPS 3 paragraph does not have an Advisory Circular or Acceptable Means of Compliance, it is considered that no supplementary material is required.

2 *PRESENTATION*

2.1 A numbering system has been used in which the Advisory Circular or Acceptable Means of Compliance uses the same number as the OPS 3 paragraph to which it refers. The number is introduced by the letters AC or AMC to distinguish the material from the OPS 3 itself.

2.2 The acronyms AC and AMC also indicate the nature of the material and for this purpose the two types of material are defined as follows:

Advisory Circulars (AC) provide guidelines on a subject matter, such as how to comply with a regulation.

Acceptable Means of Compliance (AMC) illustrates a means, or several alternative means, but not necessarily the only possible means by which a requirement can be met.

AC/AMC B

GENERAL

AC to Appendix 1 to OPS 3.005(d)
The HEMS Philosophy
See Appendix 1 to OPS 3.005(d)

1 Introduction

This AC outlines the HEMS philosophy. Starting with a description of acceptable risk and introducing a taxonomy used in other industries, it describes how risk has been addressed in the HEMS appendix to provide a system of safety to the appropriate standard. It discusses the difference between HEMS, Air Ambulance and SAR - in regulatory terms. It also discusses the application of Operations to Public Interest Sites in the HEMS context.

2 Acceptable risk

The broad aim of any aviation legislation is to permit the widest spectrum of operations with the minimum risk. In fact it may be worth considering who/what is at risk and who/what is being protected. Three groups are being protected:

- Third parties (including property) - highest protection.
- Passengers (including patients)
- Crew members (including task specialists) - lowest

It is for the Authority to facilitate a method for the assessment of risk - or as it is more commonly known, safety management.

3 Risk management

Safety management textbooks[1] describe four different approaches to the management of risk. All but the first have been used in the production of the HEMS appendix and, if we consider that the engine failure accountability of Class I performance equates to zero risk, then all four are used (this of course is not strictly true as there are a number of helicopter parts - such as the tail rotor which, due to a lack of redundancy, cannot satisfy the criteria):

Applying the taxonomy to HEMS gives:

- Zero Risk; no risk of accident with a harmful consequence - Class 1 performance (within the qualification stated above) - the HEMS Operating Base.
- De Minimis; minimised to an acceptable safety target - for example the exposure time concept where the target is less than 5×10^{-8} (in the case of elevated landing sites at hospitals in a congested hostile environment the risk is contained to the deck edge strike case - and so in effect minimised to an exposure of seconds).
- Comparative Risk; comparison to other exposure - the carriage of a patient with a spinal injury in an ambulance that is subject to ground effect compared to the risk of a HEMS flight (consequential and comparative risk).
- As Low as Reasonably Practical; where additional controls are not economically or reasonably practical - operations at the HEMS operational site (the accident site).

It is stated in OPS 3.005(d) that "...HEMS operations shall be conducted in accordance with the requirement contained in OPS 3 except for the variations contained in Appendix 1 to OPS 3.005(d) for which a special approval is required."

In simple terms there are three areas in HEMS operations where risk, beyond that allowed in the main body of OPS 3, is defined and accepted:

- in the en-route phase; where alleviation is given from height and visibility rules;
- at the accident site; where alleviation is given from the performance and size requirement; and
- at an elevated hospital site in a congested hostile environment; where alleviation is given from the deck edge strike - providing elements of the Appendix 1 to OPS 3.517(a) are satisfied.

In mitigation against these additional and considered risks, experience levels are set, specialist training is required (such as instrument training to compensate for the increased risk of inadvertent entry into

cloud); and operation with two crew (two pilots, or one pilot and a HEMS crew member) is mandated. (HEMS crews - including medical passengers - are also expected to operate in accordance with good CRM principles.)

4 Air ambulance

In regulatory terms, air ambulance is considered to be a normal transport task where the risk is no higher than for operations to the full OPS 3 compliance. This is not intended to contradict/complement medical terminology but is simply a statement of policy; none of the risk elements of HEMS should be extant and therefore none of the additional requirements of HEMS need be applied.

If we can provide a road ambulance analogy:

- If called to an emergency; an ambulance would proceed at great speed, sounding its siren and proceeding against traffic lights - thus matching the risk of operation to the risk of a potential death (= HEMS operations).
- For a transfer of a patient (or equipment) where life and death (or consequential injury of ground transport) is not an issue; the journey would be conducted without sirens and within normal rules of motoring - once again matching the risk to the task (= air ambulance operations).

The underlying principle is; the aviation risk should be proportional to the task.

It is for the medical professional to decide between HEMS or air ambulance - not the pilot! For that reason, medical staff who undertake to task medical sorties should be fully aware of the additional risks that are (potentially) present under HEMS operations (and the pre-requisite for the operator to hold a HEMS approval). (For example in some countries, hospitals have principle and alternative sites. The patient may be landed at the safer alternative site (usually in the grounds of the hospital) thus eliminating risk - against the small inconvenience of a short ambulance transfer from the site to the hospital.)

Once the decision between HEMS or air ambulance has been taken by the medical professional, the commander makes an operational judgement over the conduct of the flight.

Simplistically, the above type of air ambulance operations could be conducted by any operator holding an AOC (HEMS operators hold an AOC) - and usually are when the carriage of medical supplies (equipment, blood, organs, drugs etc.) is undertaken and when urgency is not an issue.

5 Search and rescue (SAR)

SAR operations, because they are conducted with substantial alleviations from operational and performance standards; are strictly controlled; the crews are trained to the appropriate standard; and they are held at a high state of readiness. Control and tasking is usually exercised by the Police (or the Military or Coastguard in a maritime State) and mandated under State Regulations.

It was not intended when OPS 3 was introduced, that HEMS operations would be conducted by operators not holding an AOC or operating to other than HEMS standards. It was also not expected that the SAR label would be used to circumvent the intent of OPS 3 or permit HEMS operations to a lesser standard.

6 Operating under a HEMS approval

The HEMS appendix originally contained the definitions for Air Ambulance and SAR - introduced to clarify the differences between the three activities. In consideration that, in some States, confusion has been the result, all references to activities other than HEMS have now been removed from the appendix and placed into AC material.

There are only two possibilities; transportation as passengers or cargo under the full auspices of OPS 3 (this does not permit any of the alleviations of the HEMS appendix - landing and take-off performance must be in compliance with the performance subparts of OPS 3); or operations under a HEMS approval.

7 HEMS operational sites

The HEMS philosophy attributes the appropriate levels of risk for each operational site; this is derived from practical considerations and in consideration of the probability of use. The risk is expected to be inversely proportional to the amount of use of the site. The types of site are:

HEMS operating base; from which all operations will start and finish. There is a high probability of a large number of take-offs and landings at this heliport and for that reason no alleviation from operating procedures or performance rules are contained in the HEMS appendix.

HEMS operating site; because this is the primary pick up site related to an incident or accident, its use can never be pre-planned and therefore attracts alleviations from operating procedures and performance rules - when appropriate.

The hospital site; is usually at ground level in hospital grounds or, if elevated, on a hospital building. It may have been established during a period when performance criteria was not a consideration. The amount of use of such sites depends on their location and their facilities; normally, it will be greater than that of the HEMS operating site but less than for a HEMS operating base. Such sites attract some alleviations under the HEMS rules.

8 Problems with hospital sites

During implementation of OPS 3, it was established that a number of States had encountered problems with the impact of performance rules where helicopters were operated for HEMS. Although States accept that progress should be made towards operations where risks associated with a critical power unit failure are eliminated, or limited by the exposure time concept, a number of landing sites exist which do not (or never can) allow operations to Performance Class 1 or 2 requirements.

These sites are generally found in a congested hostile environment:

- in the grounds of hospitals; or
- on hospital buildings;

The problem of hospital sites is mainly historical and, whilst the Authority could insist that such sites not be used - or used at such a low weight that critical power unit failure performance is assured, it would seriously curtail a number of existing operations.

Even though the rule for the use of such sites in hospital grounds for HEMS operations (Appendix 1 to OPS 3.005(d) sub-paragraph (c)(2)(i)(A)) attracts alleviation until 2013, it is only partial and will still impact upon present operations.

Because such operations are performed in the public interest, it was felt that the Authority should be able to exercise its discretion so as to allow continued use of such sites provided that it is satisfied that an adequate level of safety can be maintained - notwithstanding that the site does not allow operations to Performance Class 1 or 2 standards. However, it is in the interest of continuing improvements in safety that the alleviation of such operations be constrained to existing sites, and for a limited period.

It is felt that the use of public interest sites should be controlled. This will require that a directory of sites be kept and approval given only when the operator has an entry in the Route Manual Section of the Operations Manual.

The directory (and the entry in the Operations Manual) should contain for each approved site; the dimensions; any non-conformance with Annex 14; the main risks; and the contingency plan should an incident occur. Each entry should also contain a diagram (or annotated photograph) showing the main aspects of the site.

9 Summary

In summary, the following points are considered to be germane to the philosophy and HEMS regulations:

- Absolute levels of safety are conditioned by society.
- Potential risk must only be to a level appropriate to the task.
- Protection is afforded at levels appropriate to the occupants.
- The HEMS appendix addresses a number of risk areas and mitigation is built in.
- Only HEMS operations are dealt with by the appendix.
- There are three main categories of HEMS sites and each is addressed appropriately.
- State alleviation from the requirement at a hospital site is available but such alleviations should be strictly controlled by a system of registration.
- SAR is a State controlled activity and the label should not be used by operators to circumvent HEMS regulations.

10 References

a. Managing the Risks of Organizational Accidents - Professor James Reason.

AC to Appendix 1 to OPS 3.005(d), paragraph (a)(4)
HEMS Mission
(See Appendix 1 to OPS 3.005(d), paragraph (a)(4))

1 A HEMS mission normally starts and ends at the HEMS Operating Base following tasking by the "HEMS Dispatch Centre". Tasking can also occur when airborne, or on the ground at locations other than the HEMS Operating Base.

2 It is intended that the following elements be regarded as integral parts of the HEMS mission

- flights to and from the HEMS Operating Site when initiated by the HEMS Dispatch Centre;
- flights to and from a heliport for the delivery or pick-up of medical supplies and/or persons required for completion of the HEMS mission;
- flights to and from a heliport for refuelling required for completion of the HEMS mission.

All these flights are subject to the applicable requirements and alleviations of the HEMS appendix.

AC to Appendix 1 to OPS 3.005(d) sub-paragraph (b)
HEMS - Contents of the Operations Manual
See Appendix 1 to OPS 3.005(d) sub-paragraph (b)

1 The Operations Manual should contain instructions for the conduct of flights, adapted to the operations area, including at least the following:

a. operating minima;
b. recommended routes for regular flights to surveyed sites (with the minimum flight altitude);
c. guidance for the selection of the HEMS operating site in case of a flight to an unsurveyed site;
d. the safety altitude for the area over flown; and
e. procedures to be followed in case of inadvertent entry into cloud.

AC to Appendix 1 to OPS 3.005(d) sub-paragraph (c)(2)(i)(B)
Operations to a HEMS Operating Site Located in a Hostile Environment
See Appendix 1 to OPS 3.005(d) sub-paragraph (c)(2)(i)(B)

The alleviation from engine failure accountability at a HEMS Operating Site extends to HEMS/HHO where: a HEMS crew member; or a medical passenger; or ill or injured persons and other persons directly involved in the HEMS flight - are required to be hoisted as part of the HEMS flight.

AMC Appendix 1 to OPS 3.005(d), sub-paragraph (c)(2)(i)(C)
HEMS Operating Site
See Appendix 1 to OPS 3.005(d) sub-paragraph (c)(2)(i)(C)

When selecting a HEMS operating site it should have a minimum dimension of at least 2D. For night operations, unsurveyed HEMS operating sites should have dimensions of at least 4D in length and 2D in width.

AC to Appendix 1 to OPS 3.005(d) sub-paragraph (c)(3)(ii)(B)
Relevant Experience
See Appendix 1 to OPS 3.005(d) sub-paragraph (c)(3)(ii)(B)

The experience considered should take into account the geographical characteristics (sea, mountain, big cities with heavy traffic, etc.)

AC to Appendix 1 to OPS 3.005(d) sub-paragraph (c)(3)(iii)
Recency
See Appendix 1 to OPS 3.005(d) sub-paragraph(c)(3)(iii)

For the purposes of this requirement, recency may be obtained in a VFR helicopter using vision limiting devices such as goggles or screens, or in a FSTD.

AC to Appendix 1 to OPS 3.005(d), sub-paragraph (c)(3)(iv)
HEMS Crew Member
See Appendix 1 to OPS 3.005(d), sub-paragraph (c)(3)(iv)

1. When the crew is composed of one pilot and one HEMS crew member, the latter should be seated in the front seat (co-pilot seat) during the flight, so as to be able to accomplish the tasks that the commander may delegate, as necessary:

   a. assistance in navigation;

   b. assistance in radio communication/ radio navigation means selection;

   c. reading of check-lists ;

   d. monitoring of parameters;

   e. collision avoidance;

   f. assistance in the selection of the landing site;

   g. assistance in the detection of obstacles during approach and take-off phases;

2. The commander may also delegate to the HEMS crew member tasks on the ground:

   a. assistance in preparing the helicopter and dedicated medical specialist equipment for subsequent HEMS departure;

   AC to Appendix 1 to OPS 3.005(d), sub-paragraph (c)(3)(iv)b. assistance in the application of safety measures during ground operations with rotors turning (including: crowd control, embarking and disembarking of passengers, refuelling etc.).

3. When a HEMS crew member is carried it is his primary task to assist the commander. However, there are occasions when this may not be possible:

   a. At a HEMS operating site a commander may be required to fetch additional medical supplies, the HEMS crew member may be left to give assistance to ill or injured persons whilst the commander undertakes this flight. (This is to be regarded as exceptional and is only to be conducted at the discretion of the commander, taking into account the dimensions and environment of the HEMS operating site.)

   b. After arriving at the HEMS Operating Site, the installation of the stretcher may preclude the HEMS crew member from occupying the front seat.

   c. If the medical passenger requires the assistance of the HEMS crew member in flight.

   d. If the alleviations of 3.a, 3.b or 3.c are used, reduction of operating minima contained in Appendix 1 to OPS 3.005(d), sub-paragraph (c)(4) should not be used.

   e. With the exception of 3.a above, a commander should not land at a HEMS operating site without the HEMS crew member assisting from the front seat (co-pilot seat).

4. When two pilots are carried, there is no requirement for a HEMS crew member provided that the pilot non-flying (PNF) performs the aviation tasks of a HEMS crew member.

AMC to Appendix 1 to OPS 3.005(d), sub-paragraph (c)(3)(iv)(B)(B2)
Helicopter Emergency Medical Service
See Appendix 1 to OPS 3.005(d), sub-paragraph (c)(3)(iv)(B)(B2)

A flight following system is a system providing contact with the helicopter throughout its operational area.

AC to Appendix 1 to OPS 3.005(d), sub-paragraph (e)(1)(ii)(B)
Line Checks
See Appendix 1 to OPS 3.005(d), sub-paragraph (e)(1)(ii)(B)

Where due to the size, the configuration, or the performance of the helicopter, the line check cannot be conducted on an operational flight, it may be conducted on a specially arranged representative flight. This flight may be immediately adjacent to, but not simultaneous with, one of the biannual proficiency checks.

AMC Appendix 1 to OPS 3.005(d), sub-paragraph (e)(4)
Ground Emergency Service Personnel
See Appendix 1 to OPS 3.005(d), sub-paragraph (e)(4)

The task of training large numbers of emergency service personnel is formidable. Wherever possible, helicopter operators should afford every assistance to those persons responsible for training emergency service personnel in HEMS support.

AMC Appendix 1 to OPS 3.005(e)
Helicopter Operations over a Hostile Environment Located Outside a Congested Area
See Appendix 1 to OPS 3.005(e)

1 The subject Appendix has been produced to allow a number of existing operations to continue. It is expected that the alleviation will be used only in the following circumstances:

1.1 *Mountain Operations;* where present generation multi-engined aircraft cannot meet the requirement of Performance Class 1 or 2 at altitude.

1.2 *Operations in Remote Areas;* where existing operations are being conducted safely; and where alternative surface transportation will not provide the same level of safety as single-engined helicopters; and where, because of the low density of population, economic circumstances do not justify the replacement of single-engined by multi-engined helicopters (as in the case of remote arctic settlements).

2 The Authority should give prior approval.

AC to Appendix 1 to OPS 3.005(f) sub-paragraph (b)(3) and Appendix 1 to OPS 3.005(g) sub-paragraph (a)(3)
Local Operations
See Appendix 1 to OPS 3.005(f) sub-paragraph (b)(3) and Appendix 1 to OPS 3.005(g) sub-paragraph (a)(3)

1. Part of Appendix 1 to OPS 3.005(f) (and the whole of Appendix 1 to OPS 3.005(g)) contain alleviations for “local operations”. For such operations it is intended that approval will constrain the definition of “local” to be within a distance of 20 - 25nm. However, such arbitrary distances have always presented difficulties as there are always special factors which could influence such a decision. Authorities are therefore not expected to authorise local operations beyond 25nm without good operational reasons.

2. In defining “local operations” (as described in 1. above), the Authority should, except where such operations specifically “include” cross border excursions (such as sight-seeing flights in Saudi airspace), constrain operations to be within the State boundary.

AC to Appendix 1 to OPS 3.005(f) paragraph (d)(19))
Recent Experience (designated groups)
(See Appendix 1 to OPS 3.005(f) paragraph (d)(19))

1. The following helicopters and designated groups (which contain helicopters with similar characteristics) may be used for the purpose of recency obtained in accordance with Appendix 1 to OPS 3.005(f) paragraph (d)(19):

   (a) Group 1 - Bell 206/206L, Bell 407.

   (b) Group 2 - Hughes 369, MD 500 N, MD 520 N, MD 600.

   (c) Group 3 - SA 341/342, EC 120, EC 130.

   (d) Group 4 - SA 313/318, SA 315/316/319, AS 350.

   (e) Group 5 - R22, R44.

2. Additional groups may be constructed or other types may be added to the designated groups if acceptable to the Authority.

AMC Appendix 1 to OPS 3.005(f)
Operations for Small Helicopters (VFR Day Only)
See Appendix 1 to OPS 3.005(f)

1. Appendix 1 to OPS 3.005(f) contains prohibitions and alleviations when operating small helicopters VFR day only.

1.1 Where a rule in OPS 3 contains a paragraph that already allows an alternative method of compliance to be submitted for approval it is not discussed (in this AMC or the Appendix).

1.2 Where a rule is partially applicable (some paragraphs IFR some paragraphs VFR), the rule is not referenced (in this AMC or the Appendix) and normal interpretation should be applied.

2. The following rules are considered not to apply for small helicopters operating to Appendix 1 to OPS 3.005(f):

OPS 3.075 Method of carriage of persons

OPS 3.105 Unauthorised carriage

OPS 3.225 Heliport Operating Minima

OPS 3.230 Departure and Approach procedures

OPS 3.295 Selection of heliports

OPS 3.395 Ground proximity detection

OPS 3.405 Commencement and continuations of approach

Subpart E except OPS 3.465 and Appendix 1 to OPS 3.465

OPS 3.652 IFR or night operations - Flight and navigational instruments and associated equipment

OPS 3.655 Additional equipment for single pilot operation under IFR

OPS 3.670 Airborne Weather Radar Equipment

OPS 3.695 Public address system

OPS 3.700 Cockpit voice recorders 1

OPS 3.705 Cockpit voice recorders 2

OPS 3.715 Flight data recorders 1

OPS 3.720 Flight data recorders 2

OPS 3.810 Megaphones

OPS 3.815 Emergency lighting

OPS 3.855 Audio Selector Panel

OPS 3.865 Communication and Navigation equipment for operations under IFR, or under VFR over routes not navigated by reference to visual landmarks

AC to Appendix 1 to OPS 3.005(h), sub-paragraph (d)(2)(iv)
Criteria for Two Pilot HHO
See Appendix 1 to OPS 3.005(h), sub-paragraph (d)(2)(iv)

A crew of two pilots may be required when:

1. The weather conditions are below VFR minima at the offshore vessel or structure.

2. There are adverse weather conditions at the HHO site (i.e. turbulence, vessel movement, visibility).

3. The type of helicopter requires a second pilot to be carried because of cockpit visibility; or handling characteristics; or lack of automatic flight control systems.

AC to Appendix 1 to OPS 3.005(i)
Helicopter Operations to/from a Public Interest Site
See Appendix 1 to OPS 3.005(i)

1 General

Appendix 1 to OPS 3.005(i) - containing alleviations for public interest sites - was introduced to address problems that had been encountered at hospital (and lighthouse) sites due to the applicable performance requirements of Subparts G and H. These problems were enumerated in AC to Appendix 1 to OPS 3.005(d) paragraph 8, part of which is reproduced below.

"8 Problems with hospital sites

During implementation of OPS 3, it was established that a number of States had encountered problems with the impact of performance rules where helicopters were operated for HEMS. Although States accept that progress should be made towards operations where risks associated with a critical power unit failure are eliminated, or limited by the exposure time concept, a number of landing sites exist which do not (or never can) allow operations to Performance Class 1 or 2 requirements.

These sites are generally found in a congested hostile environment:

- *in the grounds of hospitals; or*
- *on hospital buildings;*

The problem of hospital sites is mainly historical and, whilst the Authority could insist that such sites not be used - or used at such a low weight that critical power unit failure performance is assured, it would seriously curtail a number of existing operations.

Even though the rule for the use of such sites in hospital grounds for HEMS operations (Appendix 1 to OPS 3.005(d) sub-paragraph (c)(2)(i)(A)) attracts alleviation until 2013, it is only partial and will still impact upon present operations.

Because such operations are performed in the public interest, it was felt that the Authority should be able to exercise its discretion so as to allow continued use of such sites provided that it is satisfied that an adequate level of safety can be maintained - notwithstanding that the site does not allow operations to Performance Class 1 or 2 standards. However, it is in the interest of continuing improvements in safety that the alleviation of such operations be constrained to existing sites, and for a limited period. ".

2. Public Interest Sites after 01 January 2013

Although elimination of such sites would remove the problem, it is recognized that phasing out, or rebuilding existing hospital and lighthouse heliports, is a long-term goal which may not be cost-effective, or even possible, in some States.

It should be noted however that existing paragraph (c) of the appendix limits the problem by confining approvals to public interest sites established before 01 January 2013 (established in this context means either: built before that date; or brought into service before that date – this precise wording was used to avoid problems associated with a ground level heliport where no building would be required). Thus the problem of these sites is contained and reducing in severity. This date was set approximately 6 months after the intended implementation of this original appendix.

From 01 January 2013 the approval of a public interest site will be confined to those sites where a CAT A procedure alone cannot solve the problem. The determination of whether the helicopter can or cannot be operated in accordance with Subpart G (Performance Class 1) should be established with the helicopter at a realistic payload and fuel to complete the mission. However, in order to reduce the risk at those sites, the application of the requirements contained in paragraph (d)(2) of the appendix will be required.

Additionally and in order to promote understanding of the problem, the text contained in paragraph (e) of the appendix has been amended to refer to Subpart G of OPS 3 and not to Annex 14 as in the original appendix. Thus Part C of the Operations Manual should reflect the non-conformance with that Subpart.

The following paragraphs discuss the problem and solutions.

3. The problem associated with public interest sites

There are a number of problems: some of which can be solved with the use of appropriate helicopters and procedures; and others which, because of the size of the heliport or the obstacle environment, cannot. They consist of:

a. Helicopters that cannot meet the performance criteria required by Subpart G;

b. The size of the FATO of the heliport (smaller than that required by the manufacturers' procedure);

c. An obstacle environment that prevents the use of the manufacturers procedure (obstacles in the back-up area)

d. An obstacle environment that does not allow recovery following a power unit failure in the critical phase of take-off (a line of buildings requiring a demanding gradient of climb) at a realistic payload and fuel to complete the mission.

e. A ground level heliport (exposure is not permitted);

3.1 *Problems associated with a*; it was recognised at the time of the adoption of the original appendix that, although the number of helicopters not meeting the absolute performance criteria of a. above were dwindling, existing HEMS and lighthouse fleets could not be replaced until 2005. (There is still a possibility that limited production will not allow the complete replacement of such limited power helicopters before the 2004 date; it is therefore suggested that Authorities should, providing an order position can be established by the operator, allow the continued use of such helicopters for a limited period, without the additional mitigation required by paragraph (d)(2) of the appendix.)

3.2 *Problems associated with b.*; the inability to climb and conduct a rejected landing back to the heliport following an engine failure before the Decision Point (DP).

3.3 *Problems associated with c.*; as in b.

3.4 *Problems associated with d;* climb into an obstacle following an engine failure after DP.

3.5 *Problems associated with e.*; may be related to;

- the size of the FATO which is too small for the manufacturers' procedure;
- no room for back-up;
- an obstacle in the take-off path; or
- a mixture of all three.

With the exception of case a., problems cannot be solved in the immediate future but can, when mitigated with the use of the latest generation of helicopters (operated at a weight that can allow useful payloads and endurance), minimise exposure to risk.

4. Long Term Solution

Although not offering a complete solution, it was felt that a significant increase in safety could be achieved by applying an additional performance margin to such operations. This solution could also be seen as mitigation proportional to the problem and would allow the time restriction of 2004 to be removed.

The required performance level of 8% climb gradient in the first segment, reflects ICAO Annex 14 Volume II in Table 4-3 – Dimensions and slopes of obstacle limitations surfaces for Performance Class 2.

The performance delta is achieved without the provision of further manufacturers data by using existing graphs to provide the RTOM.

If we examine the solution in relation to the original problem the effects can be seen.

4.1 *Solution with relation to b.;* although the problem still exists, the safest procedure is a dynamic take-off reducing the time taken to achieve Vstayup and thus allowing VFR recovery – if the failure occurs at or after Vy and 200 feet, an IFR recovery is possible.

4.2 *Solution with relation to c.;* as in b. above.

4.3 *Solution with relation to d.;* once again this does not give a complete solution, however the performance delta minimise the time during which a climb over the obstacle cannot be achieved.

4.4 *Solution with relation to e.;* as in 4.1 to 4.3 above.

AC to Appendix 1 to OPS 3.005(i) sub-paragraph (a)(1)
Improvement Programme for Public Interest Sites
(See Appendix 1 to OPS 3.005(i) sub-paragraph (a)(1)

1. General

Although it is accepted that there will be a number of public interest sites that will remain for some time, it is in the interest of safety that the numbers are reduced and eventually, as a goal, all sites eliminated. A reduction of sites can be achieved in two ways:

a. By an improvement in the performance of helicopters such that HOGE OEI is possible at weights where the mission can be performed.

b. By the use of a site improvement program: to take out of service those sites where the exposure is greatest; or by improving sites such that the performance requirement can be met.

2. Improvement in Performance

The advent of more powerful modern twin-engine helicopters has put into reach the ability to achieve the aim stated in 1.a. above. A number of these helicopters are, in 2003, almost at the point where HOGE OEI with mission payload is possible. However, although technically feasible, it is not economically justifiable to require an immediate and complete re-equipping of all HEMS fleets.

3. Improvement of Sites

Where a site could be improved by redevelopment, for example by increasing the size of the FATO, it should be done; where the problems of a site are due to the obstacle environment, a Programme to re-site the facility or remove the obstacle(s) should be a undertaken as a priority.

4. Summary

As was stated in paragraph 1. above, it is in the interest of States to reduce the risk of an accident due to an engine failure on take-off or landing. This could be achieved with a combination of policies: the use more appropriate helicopters; or, improvement by redevelopment of a site; or, the re-siting of facilities to alternative locations.

Some States have already undertaken to remove or improve public interest sites by using one, or more of the above methods. For those States where a compliance Programme is under way, the choice of reduction by elimination or redevelopment should not be put on hold whilst waiting for new generation helicopters. The improvement policy should be achieved in a reasonable time horizon – and this should be an element of the compliance program.

The approval to operate to public interest sites could be conditional upon such improvement programs being put into place. Unless such a policy is instituted, there will be no incentive for public interest sites to be eliminated in a reasonable time horizon.

AC to Appendix 1 to OPS 3.005(i) sub-paragraph (d)(2)
Helicopter Mass Limitation for Operations at a Public Interest Site
(See Appendix 1 to OPS 3.005(i) sub-paragraph (d)(2))

The helicopter mass limitation at take-off or landing specified in Appendix 1 to OPS 3.005(i) sub-paragraph (d)(2) should be determined using the climb performance data from 35 ft to 200 ft at Vtoss (First segment of the take-off flight path) contained in the Category A supplement of the Helicopter Flight Manual (or equivalent manufacturer data acceptable to the Authority according to AMC OPS 3.480(a)(1) and (a)(2)).

The first segment climb data to be considered is established for a climb at the take-off safety speed Vtoss, with the landing gear extended (when the landing gear is retractable), with the critical power unit inoperative and the remaining power units operating at an appropriate power rating (the 2 min 30 sec or 2 min One Engine Inoperative power rating, depending on the helicopter type certification). The appropriate Vtoss, is the value specified in the Category A performance section of the Helicopter Flight Manual for vertical take-off and landing procedures (VTOL or Helipad or equivalent).

The ambient conditions at the heliport (pressure-altitude and temperature) should be taken into account.

The data is usually provided in charts one of the following ways:

- Height gain in ft over a horizontal distance of 100 ft in the first segment configuration (35 ft to 200 ft, Vtoss, 2 min 30 sec / 2 min OEI power rating). This chart should be entered with a height

gain of 8 ft per 100 ft horizontally travelled, resulting in a mass value for every pressure-altitude/temperature combination considered.

- Horizontal distance to climb from 35 ft to 200 ft in the first segment configuration (Vtoss, 2 min 30 sec / 2 min OEI power rating). This chart should be entered with a horizontally distance of 628 m (2 062 ft), resulting in a mass value for every pressure-altitude/temperature combination considered.
- Rate of climb in the first segment configuration (35 ft to 200 ft, Vtoss, 2 min 30 sec / 2 min OEI power rating). This chart can be entered with a rate of climb equal to the climb speed (Vtoss) value in knots (converted to True Airspeed) multiplied by 8·1, resulting in a mass value for every pressure-altitude/temperature combination considered.

AMC OPS 3.035
Quality System
See OPS 3.035

1 Introduction

1.1 In order to show compliance with OPS 3.035, the operator should establish his Quality System in accordance with the instructions and information contained in the succeeding paragraphs.

2 General

2.1 Terminology

a. The terms used in the context of the requirement for the operator's Quality System have the following meanings:

i. Accountable Manager. The person acceptable to the Authority who has corporate authority for ensuring that all operations and maintenance activities can be financed and carried out to the standard required by the Authority, and any additional requirements defined by the operator.

ii. Quality Assurance. All those planned and systematic actions necessary to provide adequate confidence that operational and maintenance practices satisfy given requirements.

iii. Quality Manager. The manager, acceptable to the Authority, responsible for the management of the Quality System, monitoring function and requesting corrective actions. In determining the acceptability by the Authority the following is taken into consideration:

A. the receipt of training, acceptable to the Authority, on quality management systems.

B. the receipt of training, acceptable to the Authority, on Quality Audit techniques.

C. having held a position previously within the Quality Assurance department of an organisation.

D. having a detailed knowledge of the approved organisation's procedures that describe the means, methods and practices of compliance with the San Marino regulations and standards.

2.2 Quality Policy

2.2.1 The operator should establish a formal written Quality Policy Statement that is a commitment by the Accountable Manager as to what the Quality System is intended to achieve. The Quality Policy should reflect the achievement and continued compliance with OPS 3 together with any additional standards specified by the operator.

2.2.2 The Accountable Manager is an essential part of the management organisation. With regard to the text in OPS 3.175(j) and the above terminology, the term 'Accountable Manager' is intended to mean the Chief Executive/President/Managing Director/Director General/General Manager etc. of the operator's organisation, who by virtue of his position has overall responsibility (including financial) for managing the organisation.

2.2.3 The position of the Accountable Manager in the organisation should be such that at least the Nominated Postholders for Operations and Maintenance and the Quality Manager have direct access to him.

2.2.4 The Accountable Manager will have overall responsibility for the Quality System including the frequency, format and structure of the internal management evaluation activities as prescribed in paragraph 4.9 below.

2.3 Purpose of the Quality System

2.3.1 The Quality System should enable the operator to monitor compliance with OPS 3, the Operations Manual, maintenance management exposition, and any other standards specified by that operator, or the Authority, to ensure safe operations and airworthy aircraft.

2.4 Quality Manager

2.4.1 The function of the Quality Manager to monitor compliance with, and the adequacy of, procedures required to ensure safe operational practices and airworthy helicopters, as required by OPS 3.035(a), may be carried out by more than one person by means of different, but complementary, Quality Assurance Programmes.

2.4.2 The primary role of the Quality Manager is to verify, by monitoring activity in the fields of flight operations, maintenance, crew training and ground operations, that the standards required by the Authority, and any additional requirements defined by the operator, are being carried out under the supervision of the relevant Nominated Postholder.

2.4.3 The Quality Manager should be responsible for ensuring that the Quality Assurance Programme is properly established, implemented and maintained.

2.4.4 The Quality Manager should:

a. Have direct access to the Accountable Manager;

b. Have access to all parts of the operator's organisation.

2.4.5 In the case of small/very small operators (see paragraph 7.3 below), the posts of the Accountable Manager and the Quality Manager may be combined. However, in this event, quality audits should be conducted by independent personnel. In accordance with paragraph 2.4.4.b above, it will not be possible for the Accountable Manager to be one of the nominated postholders.

3 Quality System

3.1 Introduction

3.1.1 The operator's Quality System should ensure compliance with and adequacy of operational and maintenance activities requirements, standards and procedures.

3.1.2 The operator should specify the basic structure of the Quality System applicable to the operation.

3.1.3 The Quality System should be structured according to the size and complexity of the operation to be monitored ('small operators' see also paragraph 7 below).

3.2 Scope

3.2.1 As a minimum, the Quality System should address the following:

a. The provisions of OPS;

b. The operator's additional standards and operating procedures;

c. The operator's Quality Policy;

d. The operator's organisational structure;

e. Responsibility for the development, establishment and management of the Quality System;

f. Documentation, including manuals, reports and records;

g. Quality Procedures;

h. Quality Assurance Programme;

i. The required financial, material, and human resources; and

j. Training requirements.

3.2.2 The quality system should include a feedback system to the Accountable Manager to ensure that corrective actions are both identified and promptly addressed. The feedback system should also specify who is required to rectify discrepancies and non-compliance in each particular case, and the procedure to be followed if remedial action is not completed within an appropriate timescale.

3.3 Relevant Documentation

3.3.1 Relevant documentation includes the relevant part(s) of the Operations Manual and the Operator's Maintenance Management Exposition, which may be included in a separate Quality Manual.

3.3.2 In addition, relevant documentation should also include the following:

a. Quality Policy;

b. Terminology;

c. Specified operational standards;

d. A description of the organisation;

e. The allocation of duties and responsibilities;

f. Procedures to ensure regulatory compliance;

g. The Quality Assurance Programme, reflecting;

i. Schedule of the monitoring process;

ii. Audit procedures;

iii. Reporting procedures;

iv. Follow-up and remedial action procedures;

v. Recording system;

h. The training syllabus; and

i. Document control.

4 Quality Assurance Programme (See OPS 3.035(b).)

4.1 Introduction

4.1.1 The Quality Assurance Programme should include all planned and systematic actions necessary to provide confidence that all operations and maintenance are conducted in accordance with all applicable requirements, standards and procedures.

4.1.2 When establishing a Quality Assurance Programme, consideration should, at least, be given to the paragraphs 4.2 to 4.9 below:

4.2 Quality Inspection

4.2.1 The primary purpose of a quality inspection is to observe a particular event/action/document etc., in order to verify whether established procedures and requirements are followed during the accomplishment of that event and whether the required standard is achieved.

4.2.2 Typical subject areas for quality inspections are:

a. Actual flight operation;

b. Ground De/Anti-icing, if appropriate;

c. Flight Support Services;

d. Load Control;

e. Maintenance;

f. Technical Standards; and

g. Training Standards.

4.3 Audit

4.3.1 An audit is a systematic, and independent comparison of the way in which an operation is being conducted against the way in which the published procedures say it should be conducted.

4.3.2 Audits should include at least the following procedures and processes:

a. A statement explaining the scope of the audit;

b. Planning and preparation;

c. Gathering and recording evidence; and

d. Analysis of the evidence.

4.3.3 Techniques which contribute to an effective audit are:

a. Interviews or discussions with personnel;

b. A review of published documents;

c. The examination of an adequate sample of records;

d. The witnessing of the activities which make up the operation; and

e. The preservation of documents and the recording of observations.

4.4 Auditors

4.4.1 The operator should decide, depending on the complexity of the operation, whether to make use of a dedicated audit team or a single auditor. In any event, the auditor or audit team should have relevant operational and/or maintenance experience.

4.4.2 The responsibilities of the auditors should be clearly defined in the relevant documentation.

4.5 Auditor's Independence

4.5.1 Auditors should not have any day-to-day involvement in the area of the operation and/or maintenance activity which is to be audited. The operator may, in addition to using the services of full-time dedicated personnel belonging to a separate quality department, undertake the monitoring of specific areas or activities by the use of part-time auditors. The operator whose structure and size does not justify the establishment of full-time auditors, may undertake the audit function by the use of part-time personnel from within his own organisation or from an external source under the terms of an agreement acceptable to the Authority. In all cases the operator should develop suitable procedures to ensure that persons directly responsible for the activities to be audited are not selected as part of the auditing team. Where external auditors are used, it is essential that any external specialist is familiar with the type of operation and/or maintenance conducted by the operator.

4.5.2 The operator's Quality Assurance Programme should identify the persons within the company who have the experience, responsibility and authority to:

a. Perform quality inspections and audits as part of ongoing Quality Assurance;

b. Identify and record any concerns or findings, and the evidence necessary to substantiate such concerns or findings;

c. Initiate or recommend solutions to concerns or findings through designated reporting channels;

d. Verify the implementation of solutions within specific timescales;

e. Report directly to the Quality Manager.

4.6 Audit Scope

4.6.1 Operators are required to monitor compliance with the procedures they have designed to ensure safe operations, airworthy aircraft and the serviceability of both operational and safety equipment. In doing so they should as a minimum, and where appropriate, monitor:

a. Organisation;

b. Plans and Company objectives;

c. Operational Procedures;

d. Flight Safety;

e. Operator certification (AOC/Operations specification);

f. Supervision;

g. Helicopter Performance;

h. All Weather Operations*;*

i. Communications and Navigational Equipment and Practices;

j. Mass, Balance and Helicopter Loading;

k. Instruments and Safety Equipment;

l. Manuals, Logs, and Records;

m. Flight and Duty Time Limitations, Rest Requirements, and Scheduling;

n. Helicopter Maintenance/Operations interface;

o. Use of the MEL;

p. Maintenance Programmes and Continued Airworthiness;

q. Airworthiness Directives management;

r. Maintenance Accomplishment;

s. Defect Deferral;

t. Flight Crew;

u. Cabin Crew, if appropriate;

v. Dangerous Goods;

w. Security; and

x. Training.

4.7 Audit Scheduling

4.7.1 A Quality Assurance Programme should include a defined audit schedule and a periodic review cycle area by area. The schedule should be flexible, and allow unscheduled audits when trends are identified. Follow-up audits should be scheduled when necessary to verify that corrective action was carried out and that it was effective.

4.7.2 The operator should establish a schedule of audits to be completed during a specified calendar period. All aspects of the operation should be reviewed within every period of 12 months in accordance with the programme unless an extension to the audit period is accepted as explained below. The operator may increase the frequency of audits at his discretion but should not decrease the frequency without the agreement of the Authority. It is considered unlikely that a frequency of greater than 24 months would be acceptable for any audit topic.

4.7.3 When the operator defines the audit schedule, significant changes to the management, organisation, operation, or technologies should be considered as well as changes to the regulatory requirements.

4.8 Monitoring and Corrective Action

4.8.1 The aim of monitoring within the Quality System is primarily to investigate and judge its effectiveness and thereby to ensure that defined policy, operational, and maintenance standards are continuously complied with. Monitoring activity is based upon quality inspections, audits, corrective action and follow-up. The operator should establish and publish a procedure to monitor regulatory compliance on a continuing basis. This monitoring activity should be aimed at eliminating the causes of unsatisfactory performance.

4.8.2 Any non-compliance identified as a result of monitoring should be communicated to the manager responsible for taking corrective action or, if appropriate, the Accountable Manager. Such non-compliance should be recorded, for the purpose of further investigation, in order to determine the cause and to enable the recommendation of appropriate corrective action.

4.8.3 The Quality Assurance Programme should include procedures to ensure that corrective actions are taken in response to findings. These procedures should monitor such actions to verify their effectiveness and that they have been completed. Organisational responsibility and accountability for the implementation of corrective action resides with the department cited in the report identifying the finding. The Accountable Manager will have the ultimate responsibility for resourcing the corrective action and ensuring, through the Quality Manager, that the corrective action has re-established compliance with the standard required by the Authority, and any additional requirements defined by the operator.

4.8.4 Corrective action

a. Subsequent to the quality inspection/audit, the operator should establish:

i. The seriousness of any findings and any need for immediate corrective action;

ii. The origin of the finding;

iii. What corrective actions are required to ensure that the non-compliance does not recur;

iv. A schedule for corrective action;

v. The identification of individuals or departments responsible for implementing corrective action; and

vi. Allocation of resources by the Accountable Manager, where appropriate.

4.8.5 The Quality Manager should:

a. Verify that corrective action is taken by the manager responsible in response to any finding(s) of non-compliance;

b. Verify that corrective action includes the elements outlined in paragraph 4.8.4 above;

c. Monitor the implementation and completion of corrective action;

d. Provide management with an independent assessment of corrective action, implementation and completion;

e. Evaluate the effectiveness of corrective action through the follow-up process.

4.9 Management Evaluation

4.9.1 A management evaluation is a comprehensive, systematic, documented review of operational policies, procedures, and systems and should consider:

a. The results of inspections, audits and any other indicators; and

b. The overall effectiveness of the management organisation in achieving stated objectives.

4.9.2 A management evaluation should identify and correct trends, and prevent, where possible, future non-conformities. Conclusions and recommendations made as a result of an evaluation should be submitted in writing to the responsible manager for action. The responsible manager should be an individual who has the authority to resolve issues and take action.

4.9.3 The Accountable Manager should decide upon the frequency, format, and structure of internal management evaluation activities.

4.10 Recording

4.10.1 Accurate, complete, and readily accessible records documenting the results of the Quality Assurance Programme should be maintained by the operator. Records are essential data to enable the operator to analyse and determine the root causes of non-conformity, so that areas of non-compliance can be identified and addressed.

4.10.2 The following records should be retained for a period of 5 years:

a. Audit Schedules;

b. Inspection and Audit reports;

c. Responses to findings;

d. Corrective action reports;

e. Follow-up and closure reports; and

f. Management Evaluation reports.

5 Quality Assurance Responsibility for Sub-Contractors

5.1 Sub-Contractors

5.1.1 Operators may decide to sub-contract out certain activities to external agencies for the provision of services related to areas such as:

a. Ground De-icing/Anti-icing;

b. Maintenance;

c. Ground handling;

d. Flight Support (including Performance calculations, flight planning, navigation database and despatch);

e. Training; and

f. Manual preparation.

5.1.2 The ultimate responsibility for the quality of the product or service always remains with the operator. A written agreement should exist between the operator and the sub-contractor clearly defining the services and quality to be provided. The sub-contractor’s activities relevant to the agreement should be included in the operator’s Quality Assurance Programme.

5.1.3 The operator should ensure that the sub-contractor has the necessary authorisation/approval when required, and commands the resources and competence to undertake the task. If the operator requires the sub-contractor to conduct activity which exceeds the sub-contractor's authorisation/approval, the operator is responsible for ensuring that the sub-contractor's quality assurance takes account of such additional requirements.

6 Quality System Training

6.1 General

6.1.1 The operator should establish effective, well planned and resourced quality related training for all personnel.

6.1.2 Those responsible for managing the Quality System should receive training covering:

a. An introduction to the concept of the Quality System;

b. Quality management;

c. The Concept of Quality Assurance;

d. Quality manuals;

e. Audit techniques;

f. Reporting and recording; and

g. The way in which the Quality System will function in the company.

6.1.3 Time should be provided to train every individual involved in quality management and for briefing the remainder of the employees. The allocation of time and resources should be governed by the size and complexity of the operation concerned.

6.2 Sources of Training

6.2.1 Quality management courses are available from the various National or International Standards Institutions, and the operator should consider whether to offer such courses to those likely to be involved in the management of Quality Systems. Operators with sufficient appropriately qualified staff should consider whether to carry out in-house training.

7 Organisations with 20 or less full time employees

7.1 Introduction

The requirement to establish and document a Quality System and to employ a Quality Manager applies to all operators. References to large and small operators elsewhere in the requirements are governed by aircraft capacity (i.e. more or less than 10 seats) and by mass (greater or less than 3175 kg maximum certificated take-off mass (MCTOM)). Such terminology is not relevant when considering the scale of an operation and the Quality System required. In the context of quality systems therefore, operators should be categorised according to the number of full time staff employees.

7.2 Scale of Operation

7.2.1 Operators who employ 5 or less full time staff are considered to be 'very small' while those employing between 6 and 20 full time employees are regarded as 'small' operators as far as quality systems are concerned. Full-time in this context means employed for not less than 35 hours per week excluding vacation periods.

7.2.2 Complex quality systems could be inappropriate for small or very small operators and the clerical effort required to draw up manuals and procedures for a complex system may stretch their resources. It is therefore accepted that such operators should tailor their quality systems to suit the size and complexity of their operation and allocate resources accordingly.

7.3 Quality Systems for small/very small Operators

7.3.1 For the 'very small' operator it may be appropriate to develop a Quality Assurance Programme that employs a checklist. The checklist should have a supporting schedule that requires completion of all checklist items within a specified timescale, together with a statement acknowledging completion of a periodic review by top management. An occasional independent overview of the checklist content and achievement of the Quality Assurance should be undertaken.

7.3.2 The 'small' operator may decide to employ an internal or external system or a combination of the two. In these circumstances it would be acceptable for external specialists and or qualified organisations to manage the quality system on behalf of the Quality Manager.

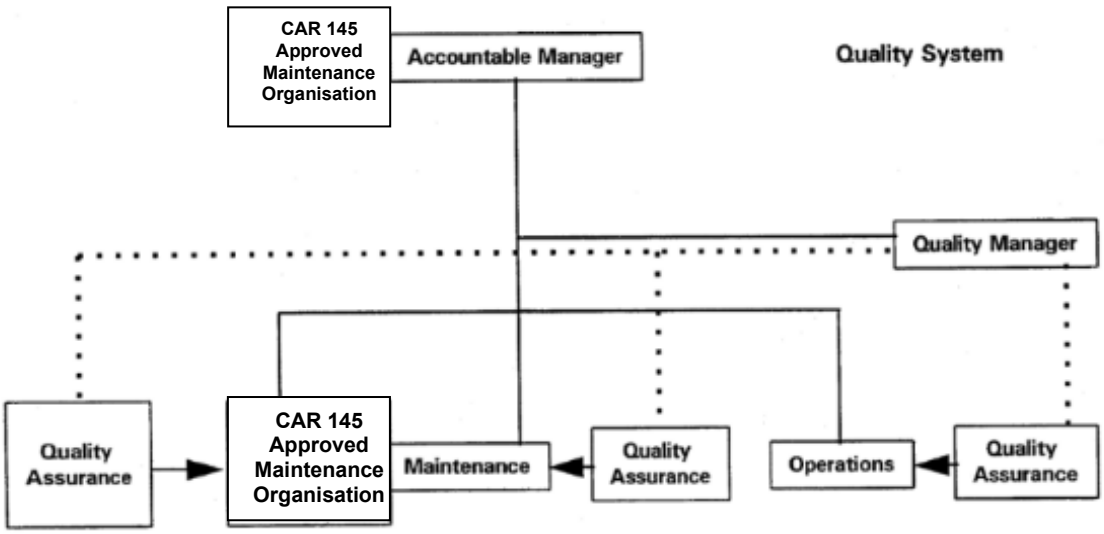
7.3.3 If the independent quality monitoring function is being conducted by an organisation other than the one carrying out the operations, it is necessary for the audit schedule to be shown in the relevant documentation.

7.3.4 Whatever arrangements are made, the operator retains the ultimate responsibility for quality activities and corrective actions.

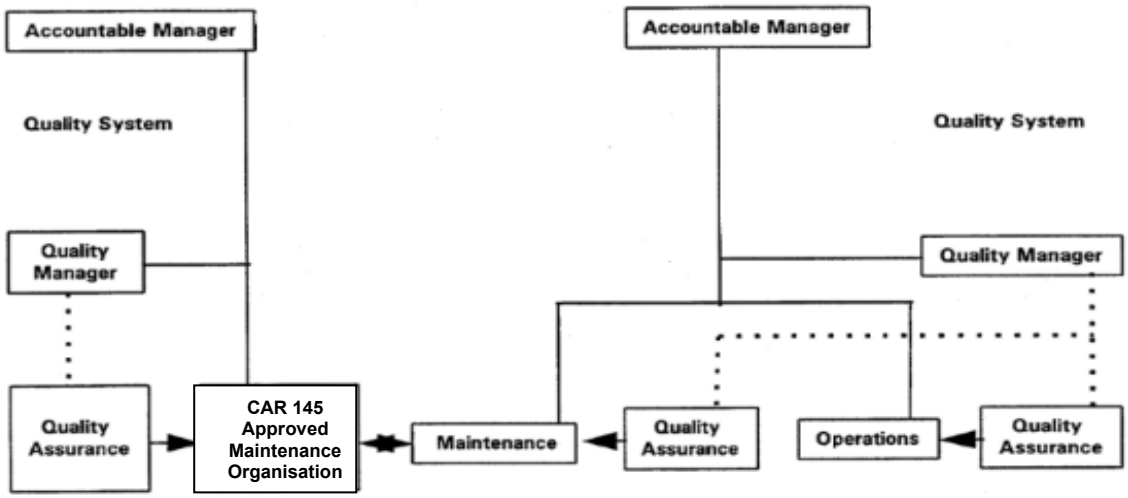
AMC OPS 3.035
Quality System - Organisation Examples
See OPS 3.035

The following diagrams illustrate two typical examples of Quality organisations.

1 Quality System within an organisation when the organisation also holds an CAR 145 approval.



2 Quality Systems related to an organisation where aircraft maintenance is contracted out to an approved organisation which is not integrated with the AOC holder:



Note: The Quality System and Quality Audit Programme of the AOC holder should assure that the maintenance carried out by the approved organisation is in accordance with requirements specified by the AOC holder.

AMC OPS 3.037
Safety Management System
See OPS 3.037

1 Guidance material for the establishment of a Safety Management System can be found in:

a. [CAR SMS; and

b. CAP 15].

c. ICAO Doc, 9859 (Safety Management Manual)

2 Where available, use may be made of analysis of flight data recorder information (See also OPS 3.160(c).)

AC OPS 3.037(c)
Occurrence Reporting Scheme
See OPS 3.037(c)

1. The overall objective of the scheme described in OPS 3.037(c) is to use reported information to improve the level of flight safety and not to attribute blame.

2. The detailed objectives of the scheme are:

a. To enable an assessment of the safety implications of each relevant incident and accident to be made, including previous similar occurrences, so that any necessary action can be initiated; and

b. To ensure that knowledge of relevant incidents and accidents is disseminated so that other persons and organisations may learn from them.

3. The scheme is an essential part of the overall monitoring function; it is complementary to the normal day to day procedures and 'control' systems and is not intended to duplicate or supersede any of them. The scheme is a tool to identify those occasions where routine procedures have failed. (Occurrences that have to be reported and responsibilities for submitting reports are described in OPS 3.420.)

4. Occurrences should remain in the database when judged reportable by the person submitting the report as the significance of such reports may only become obvious at a later date.

AMC OPS 3.065
Carriage of Weapons of War and Munitions of War
See OPS 3.065

1 There is no internationally agreed definition of weapons of war and munitions of war. Some States may have defined them for their particular purposes or for national need.

2 It should be the responsibility of the operator to check, with the State(s) concerned, whether or not a particular weapon or munition is regarded as a weapon of war or munition of war. In this context, States which may be concerned with granting approvals for the carriage of weapons of war or munitions of war are those of origin, transit, overflight and destination of the consignment and the State of the Operator.

3 Where weapons of war or munitions of war are also dangerous goods by definition (e.g. torpedoes, bombs, etc.), Subpart R will also apply. (See also AMC OPS 3.070)

AMC OPS 3.070
Carriage of Sporting Weapons
See OPS 3.070

1 There is no internationally agreed definition of sporting weapons. In general they may be any weapon which is not a weapon of war or munitions of war (See AMC OPS 3.065). Sporting weapons include hunting knives, bows and other similar articles. An antique weapon, which at one time may have been a weapon of war or munitions of war, such as a musket, may now be regarded as a sporting weapon.

2 A firearm is any gun, rifle or pistol which fires a projectile.

3 In the absence of a specific definition, for the purpose of OPS and in order to provide some guidance to operators, the following firearms are generally regarded as being sporting weapons:

a. Those designed for shooting game, birds and other animals;

b. Those used for target shooting, clay-pigeon shooting and competition shooting, providing the weapons are not those on standard issue to military forces;

c. Airguns, dart guns, starting pistols, etc.

4 A firearm, which is not a weapon of war or munition of war, should be treated as a sporting weapon for the purposes of its carriage on a helicopter.

5 Other procedures for the carriage of sporting weapons may need to be considered if the helicopter does not have a separate compartment in which the weapons can be stowed.

These procedures should take into account the nature of the flight, its origin and destination, and the possibility of unlawful interference. As far as possible, the weapons should be stowed so they are not immediately accessible to the passengers (e.g. in locked boxes, in checked baggage which is stowed under other baggage or under fixed netting). If procedures other than those in OPS 3.070(b)(1) are applied, the commander should be notified accordingly.

AC OPS 3.125
Documents to be Carried
See OPS 3.125

The Certificate of Registration and Certificate of Airworthiness will now be presented in digital format. The certificates, when issued by the Authority, are rendered valid as the original documents in their digital form. They satisfy the on-board carriage requirements for aircraft engaged in international air navigation in accordance with Articles 29 and 31 of the Convention on International Civil Aviation as well as the requirements of Annex 7 and 8 to the same Convention.

The procedures for the carriage of an electronic version of the documents listed in OPS 3.125(a) must be acceptable to the Authority.

AMC OPS 3.130
Manuals to be Carried
See OPS 3.130 (a) (1)

The carriage of an approved electronic version of the Operations Manual is acceptable.

AMC OPS 3.160(a)
Preservation of Recordings
See OPS 3.160(a)

The phrase ‘to the extent possible’ means that either:

1. There may be technical reasons why all of the data cannot be preserved, or

2. The helicopter may have been despatched with unserviceable recording equipment as permitted by OPS 3.700(f), 3.705(f), 3.715(h), or 3.720(h).

AC/AMC C

OPERATOR CERTIFICATION & SUPERVISION

AC OPS 3.175(d)(2)
Principal Place of Business

See OPS 3.175(d)(2

1 OPS 3.175(d)(2) requires the operator to have his principal place of business located in San Marino.

2 If maintenance, continuing airworthiness functions or operational control is outsourced, the registered office in San Marino must demonstrate, to the Authority, the ability to ensure regulatory compliance.

AMC OPS 3.175(i)
Nominated Persons
See OPS 3.175(i)

a. The person may hold more than one of the nominated posts if such an arrangement is considered suitable and properly matched to the scale and scope of the operation.

b. A description of the functions and the responsibilities of the nominated persons, including their names, should be contained in the operations manual.

c. The holder of an AOC should make arrangements to ensure continuity of supervision in the absence of nominated persons and these arrangements must be in the Operations Manual..

d. The person nominated by the holder of an AOC should not be nominated by another holder of an AOC, unless agreed with the competent authorities concerned.

e Persons nominated should be contracted to work sufficient hours to fulfil the management functions associated with the scale and scope of the operation.

AC OPS 3.175(j)
Accountable Manager
See OPS 3.175(j)

The Accountable Manager is the person acceptable to the Authority who has corporate authority for ensuring that all operations and maintenance activities can be financed and carried out to the standard required by the Authority, and any additional requirements defined by the operator.

The Accountable Manager's responsibilities include:

1. being the single, identifiable person having responsibility for the effective and efficient performance of the organisation including the Safety Management System (SMS).

2. having direct responsibility for the conduct of the organisation's affairs.

3. ensuring that all necessary resources are available to accomplish the standards defined in the CAA requirements and the organisation's approved manuals.

4. having ultimate responsibility for operational standards and compliance with the relevant regulations

5. having full authority for financial matters.

6. having full authority for human resources.

7. having final responsibility for all safety and quality functions and standards.

8. establishing and promote the safety and quality policy specified in the applicable regulations.

9. demonstrating a basic understanding of the regulations applicable to the CAA approval granted.

AMC OPS 3.175(k)
Nominated Persons
See OPS 3.175(k)

The smallest organisation that can be considered is the one-man organisation where all of the nominated posts are filled by the accountable manager, and audits are conducted by an independent person.

AC OPS 3.175(k)
Combination of Nominated Postholder's Responsibilities
See OPS 3.175(k)

1. The acceptability of a single person holding several posts, possibly in combination with being the accountable manager, will depend upon the nature and scale of the operation. The two main areas of concern are competence and an individual's capacity to meet his responsibilities.
2. As regards competence in the different areas of responsibility, there should not be any difference from the requirements applicable to persons holding only one post.
3. The capacity of an individual to meet his responsibilities will primarily be dependent upon the scale of the operation. However the complexity of the organisation or of the operation may prevent, or limit, combinations of posts which may be acceptable in other circumstances.
4. In most circumstances, the responsibilities of a nominated postholder will rest with a single individual. However, in the area of ground operations, it may be acceptable for these responsibilities to be split, provided that the responsibilities of each individual concerned are clearly defined.
5. The intent of OPS 3.175 is neither to prescribe any specific organisational hierarchy within the operator's organisation nor to prevent an Authority from requiring a certain hierarchy before it is satisfied that the management organisation is suitable.

AC OPS 3.175(k)
Nominated Postholders - Competence
See OPS 3.175(k)

1. *General.*

1.1 A nominee for postholder should be able to demonstrate experience and the ability to perform effectively the functions associated with the post and with the scale of the operation; and

1.2 Nominated postholders should have:

1.2.1 Practical experience and expertise in the application of aviation safety standards and safe operating practices;

1.2.2 Comprehensive knowledge of:

a. OPS and any associated requirements and procedures;

b. The AOC holder's Operations Specifications;

c. The need for, and content of, the relevant parts of the AOC holder's Operations Manual;

1.2.3 Familiarity with Quality Systems;

1.2.4 Appropriate management experience.

2. *Flight Operations.* The nominated postholder or his deputy should hold, or have held, a Flight Crew Licence appropriate to the type of operation conducted under the AOC in accordance with the following:

2.1 If the AOC includes helicopters certificated for a minimum crew of 2 pilots - An Airline Transport Pilot's Licence issued or validated by an ICAO State:

2.2 If the AOC is limited to helicopters certificated for a minimum crew of 1 pilot - A Commercial Pilot's Licence issued or validated by an ICAO State.

3. For larger companies or companies with complex structures, postholders should be expected to satisfy the Authority that they possess the appropriate experience and licensing requirements which are listed in paragraphs 4 to 6 below.

4. *Continuing Airworthiness.* The nominated postholder should possess the following:

4.1 Relevant engineering degree, or aircraft maintenance technician with additional education acceptable to the Authority. 'Relevant engineering degree' means an engineering degree from Aeronautical, Mechanical, Electrical, Electronic, Avionic or other studies relevant to the maintenance of aircraft/aircraft components.

4.2 Thorough familiarity with the organisation's Maintenance Management Exposition.

4.3 Knowledge of the relevant type(s) of helicopter;

4.4 Knowledge of maintenance methods.

5. *Crew Training.* The nominated postholder or his deputy should be a current Type Rating Instructor on a type operated under the AOC.

5.1 The nominated postholder should have a thorough knowledge of the AOC holder's crew training concept for Flight Crew and for Cabin Crew when relevant.

6. *Ground Operations.* The nominated postholder should have a thorough knowledge of the AOC holder's ground operations concept**.**

AC OPS 3.175(l) & (m)
Employment of Staff
See OPS 3.175(l) & (m*)*

In the context of OPS 3.175(l) & (m), the expression "full-time staff" means members of staff who are employed for not less than (an average of) 35 hours per week excluding vacation periods. For the purpose of establishing the scale of operation, administrative staff, not directly involved in operations or maintenance, should be excluded.

AMC OPS 3.175(g)-(t)
The Management Organisation of an AOC Holder
See OPS 3.175(g) - (t)

1 Function and Purpose

1.1 The safe conduct of air operations is achieved by the operator and an Authority working in harmony towards a common aim. The functions of the two bodies are different, well defined, but complementary. In essence, the operator complies with the standards set through putting in place a sound and competent management structure. The Authority working within a framework of law statutes), sets and monitors the standards expected from operators.

2 Responsibilities of Management

2.1 The responsibilities of management related to OPS 3 should include at least the following five main functions:

a. Determination of the operator's flight safety policy;

b. Allocation of responsibilities and duties and issuing instructions to individuals, sufficient for implementation of company policy and the maintenance of safety standards;

c. Monitoring of flight safety standards;

d. Recording and analysis of any deviations from company standards and ensuring corrective action;

e. Evaluating the safety record of the company in order to avoid the development of undesirable trends.

AMC OPS 3.185(b)
Maintenance Management Exposition Details
See OPS 3.185(b)

1 The operator's organisation's maintenance management exposition should reflect the details of any sub-contract(s).

2 A change of helicopter type or of the approved maintenance organisation may require the submission of an acceptable amendment to the operator's management exposition.

Note: Refer to Subpart M

AC/AMC D

OPERATIONAL PROCEDURES

AC OPS 3.195
Operational Control
See OPS 3.195

1 Operational control means the exercise by the operator, in the interest of safety, of responsibility for the initiation, continuation, termination or diversion of a flight. This does not imply a requirement for licensed flight dispatchers or a full flight watch system.

2 The organisation and methods established to exercise operational control should be included in the operations manual and should cover at least a description of responsibilities concerning the initiation, continuation, termination or diversion of each flight.

AMC OPS 3.210(a)
Establishment of Procedures
See OPS 3.210(a)

The operator should specify the contents of safety briefings for all cabin crew members prior to the commencement of a flight or series of flights.

AMC OPS 3.210(b)
Establishment of Procedures
See OPS 3.210

When the operator establishes procedures and a checklist system for use by cabin crew with respect to the helicopter cabin, at least the following items should be taken into account:

ITEM	PRE-TAKE- OFF	IN-FLIGHT	PRE-LANDING	POST-LANDING
1. Brief of cabin crew by the senior cabin crew member prior to commencement of a flight or series of flights.	x			
2. Check of safety equipment in accordance with operator's policies and procedures.	x			
3. Security checks as required by Subpart S (OPS 3.1250).	x			x
4. Supervision of passenger embarkation and disembarkation (OPS 3.075; OPS 3.105; OPS 3.270; OPS 3.280; OPS 3.305).	x			x
5. Securing of passenger cabin (e.g. seat belts, cabin cargo/baggage etc. (OPS 3.280; OPS 3.285; OPS 3.310).	x		x	
6. Securing of galleys and stowage of equipment (OPS 3.325).	x		x	
7. Intentionally left blank.				
8. Intentionally left blank.				
9. 'Cabin secure' report to flight crew.	x		x	
10. Operation of cabin lights.	x	if required	x	
11. Cabin crew at crew stations for take-off and landing. (OPS 3.210(c)/AMC OPS 3.210(c), OPS 3.310).	x		x	x
12. Surveillance of passenger cabin.	x	x	x	x
13. Prevention and detection of fire in the cabin, galleys and toilets and instructions for actions to be taken.	x	x	x	x
14. Action to be taken when turbulence is encountered. (See also OPS 3.320 and OPS 3.325).	x	x		
15. Intentionally left blank.	x			
16. Reporting of any deficiency and/or unserviceability of equipment.	x	x	x	x

AC OPS 3.210(d)
Establishment of Procedures
See OPS 3.210

The intent of this paragraph is to ensure that the pilot remains at the controls when the rotors are turning under power whilst not preventing ground runs being conducted by qualified personnel other than pilots. The operator should ensure that the qualification of personnel, other than pilots, who are authorised to conduct ground runs is described in the appropriate manual.

AMC No 1 to OPS 3.220
Authorisation of Heliports by the Operator
See OPS 3.220

1 When defining sites for use as heliports (including infrequent or temporary heliports) for the type(s) of helicopter(s) and operation(s) concerned, the operator should take account of the following:

2 An adequate site is a site which the operator considers to be satisfactory, taking account of the applicable performance requirements and site characteristics (guidance on standards and criteria are contained in ICAO Annex 14 Volume 2 and in the ICAO 'Heliport Manual' (Doc 9261-AN/903)).

3 The operator should have in place a procedure for the survey of sites by a competent person. Such a procedure should take account for possible changes to the site characteristics which may have taken place since last surveyed.

4 Sites which are pre-surveyed should be specifically authorised in the operator's Operations Manual. The Operations Manual should contain diagrams or/and ground and aerial photographs, and depiction (pictorial) and description of:

a. The overall dimensions of the site;

b. Location and height of relevant obstacles to approach and take-off profiles, and in the manoeuvring area;

c. Approach and take-off flight paths;

d. Surface condition (blowing dust/snow/sand);

e. Helicopter types authorised with reference to performance requirements;

f. Provision of control of third parties on the ground (if applicable);

g. Procedure for activating site with land owner or controlling authority;

h. Other useful information, for example appropriate ATS agency and frequency;

j. Lighting (if applicable);

5 For sites which are not pre-surveyed, the Operator should have in place a procedure which enables the pilot to make, from the air, a judgment on the suitability of a site. Items (a) to (f) inclusive in (4) above should be considered.

6 Operations to non pre-surveyed sites by night (except in accordance with Appendix 1 to 3.005(d) - (c)(2)(i)(C)) should not be permitted.

AMC No 2 to OPS 3.220
Authorisation of Heliports by the Operator - Helidecks
See OPS 3.220
See OPS 3.1045

1 The content of Part C of the Operations Manual relating to the specific authorisation of helidecks should contain both the listing of helideck limitations in a Helideck Limitations List (HLL) and a pictorial representation (template) of each helideck showing all necessary information of a permanent nature. The HLL will show, and be amended as necessary to indicate, the most recent status of each helideck concerning non-compliance with ICAO Annex 14 Volume 2, limitations, warnings, cautions or other comments of operational importance. An example of a typical template is shown in Figure 1.

2 In order to ensure that the safety of flights is not compromised, the operator should obtain relevant information and details for compilation of the HLL, and the pictorial representation, from the owner/operator of the helideck.

3 When listing helidecks, if more than one name of the helideck exists, the most common name should be used, other names should also be included. After renaming a helideck, the old name should be included in the HLL for the ensuing 6 months.

4 All helideck limitations should be included in the HLL. Helidecks without limitations should also be listed. With complex installations and combinations of installations (e.g. co-locations), a separate listing in the HLL, accompanied by diagrams where necessary, may be required.

5 Each helideck should be assessed (based on limitations, warnings, cautions or comments) to determine its acceptability with respect to the following which, as a minimum, should cover the factors listed below:

a. The physical characteristics of the helideck.

b. The preservation of obstacle protected surfaces is the most basic safeguard for all flights.

These surfaces are:

(i) The minimum 210° obstacle free surface (OFS);

(ii) The 150° limited obstacle surface (LOS); and

(iii) The minimum 180° falling "5:1" - gradient with respect to significant obstacles. If this is infringed or if an adjacent installation or vessel infringes the obstacle clearance surfaces or criteria related to a helideck, an assessment should be made to determine any possible negative effect which may lead to operating restrictions.

c. Marking and lighting:

(i) Adequate perimeter lighting;

(ii) Adequate floodlighting;

(iii) Status lights (NB for night and day operations e.g. Aldis Lamp);

(iv) Dominant obstacle paint schemes and lighting;

(v) Helideck markings; and

(vi) General installation lighting levels. Any limited authorisation in this respect should be annotated "daylight only operations" on the HLL.

d. Deck surface:

(i) Surface friction;

(ii) Helideck net;

(iii) Drainage system;

(iv) Deck edge netting;

(v) Tie down system; and

(vi) Cleaning of all contaminants.

e. Environment:

(i) Foreign Object Damage;

(ii) Physical turbulence generators;

(iii) Bird control,

(iv) Air quality degradation due to exhaust emissions, hot gas vents or cold gas vents; and

(v) Adjacent helidecks may need to be included in air quality assessment.

f. Rescue and firefighting:

(i) Primary and complementary media types, quantities, capacity and systems personal protective equipment and clothing, breathing apparatus; and

(ii) Crash box;

g. Communications & Navigation:

(i) Aeronautical Radio(s);

(ii) R/T callsign to match helideck name and side identification which should be simple and unique;

(iii) NDB or equivalent (as appropriate);

(iv) Radio log; and

(v) Light signal (e.g. Aldis Lamp).

h. Fuelling facilities:

(i) In accordance with the relevant national guidance and regulations; .

i. Additional operational and handling equipment:

(i) Windsock;

(ii) Wind recording;

(iii) Deck motion recording and reporting where applicable;

(iv) Passenger briefing system;

(v) Chocks;

(vi) Tie downs; and

(vii) Weighing scales.

j. Personnel:

(i) Trained helideck staff (e.g. Helicopter Landing Officer/Helicopter Deck Assistant and fire fighters etc.).

k. Other:

(i) as appropriate.

6 For helidecks about which there is incomplete information, a ‘limited’ authorisation based on the information available may be issued by the operator prior to the first helicopter visit. During subsequent operations and before full authorisation is given, information should be gathered and the following procedures should apply:

a. Pictorial (static) representation:

(i) Template (see figure 1) blanks should be available, to be filled out during flight preparation on the basis of the information given by the helideck owner/operator and flight crew observations.

(ii) Where possible, suitably annotated photographs may be used until the HLL and template has been completed.

(iii) Until the HLL and Template has been completed, operational restrictions (e.g. performance, routing etc.) may be applied.

(iv) Any previous inspection reports should be obtained by the operator.

(v) An inspection of the helideck should be carried out to verify the content of the completed HLL and template, following which the helideck may be fully authorised for operations.

b. With reference to the above, the HLL should contain at least the following:

(i) HLL revision date and number;

(ii) Generic list of helideck motion limitations;

(iii) Name of Helideck;

(iv) 'D'-value of the helideck; and

(v) Limitations, warnings, cautions and comments.

c. The template should contain at least the following (see example below):

(i) Installation/Vessel name;

(ii) R/T Callsign;

(iii) Helideck Identification Marking;

(iv) Side Panel Identification Marking;

(v) Helideck elevation;

(vi) Maximum installation/vessel height;

(vii) 'D' Value;

(viii) Type of installation/vessel;

- Fixed manned
- Fixed unmanned
- Ship type (e.g. diving support vessel)
- Semi-submersible
- Jack-up

(ix) Name of owner/operator;

(x) Geographical position;

(xi) Com/Nav Frequencies and Ident;

(xii) General drawing preferably looking into the helideck with annotations showing location of derrick, masts, cranes, flare stack, turbine and gas exhausts, side identification panels, windsock etc.;

(xiii) Plan view drawing, chart orientation from the general drawing, to show the above. The plan view will also show the 210 degree bisector orientation in degrees true;

(xiv) Type of fuelling:

- Pressure and Gravity
- Pressure only
- Gravity only
- None

(xv) Type and nature of firefighting equipment;

(xvi) Availability of GPU;

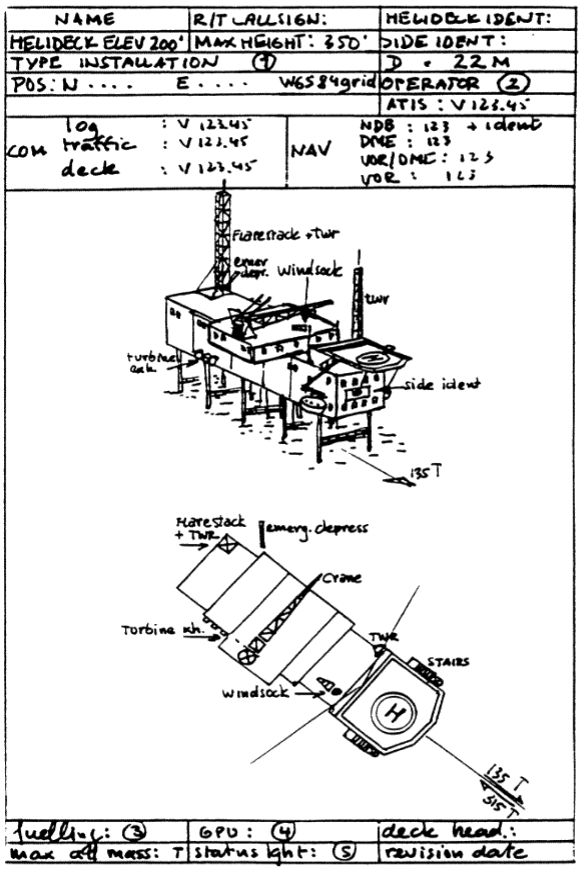
(xvii) Deck heading;

(xviii) Maximum allowable mass;

(xix) Status light (Yes/No); and

(xx) Revision date of publication.

Figure 1 – Helideck Template



1. Fixed manned; fixed unmanned; small ship; large ship; semi-submersible; jack-up.
2. NAM, AMOCO etc.
3. Pressure/gravity; pressure; gravity; no.
4. Yes; no; 28V DC.
5. Yes; no.

AMC OPS 3.240(a)(6)
Coastal Transit
See OPS 3.240(a)(6)

1 Introduction

1.1 A helicopter operating overwater in Performance Class 3, has to have certain equipment fitted. This equipment varies with the distance from land that the helicopter is expected to operate. The aim of this AMC is to discuss that distance, bring into focus what fit is required and to clarify the operator's responsibility, when a decision is made to conduct coastal transit operations.

1.2 The coastal corridor facility may or may not be available in a particular state, as it is related to the State definition of open sea area as described in the definition of hostile environment and AMC 3.480(a)(12).

1.3 Where the term Coastal Transit is used, it means the conduct of operations overwater within the coastal corridor in conditions where there is reasonable expectation that; the flight can be conducted safely in the conditions prevailing; and, following an engine failure, a safe forced landing and successful evacuation can be achieved; and survival of the crew and passengers can be assured until rescue is effected.

1.4 Coastal corridor is a variable distance from the coastline to a maximum distance corresponding to 3 minutes flying at normal cruising speed.

2 Establishing the width of the coastal corridor.

2.1 The distance from land of Coastal Transit, is defined the boundary of a corridor that extends from the land, to a maximum distance of up to 3 minutes at normal cruising speed (approximately 5 - 6 nm). Land in this context includes sustainable ice (see a. to c. below) and, where the coastal region includes islands, the surrounding waters may be included in the corridor and aggregated with the coast and each other. Coastal transit need not be applied to inland waterways, estuary crossing or river transit.

a. In some areas, the formation of ice is such that it can be possible to land, or force land, without hazard to the helicopter or occupants. Unless the Authority considers that operating to, or over, such ice fields is unacceptable, the operator may regard the definition of the “land” extends to these areas.

b. The interpretation of the following rules may be conditional on a. above:

OPS 3.240(a)(6)

OPS 3.825

OPS 3.827

OPS 3.830

OPS 3.843

c. In view of the fact that such featureless and flat white surfaces could present a hazard and could lead to white-out conditions, the definition of land does not extend to flights over ice fields in the following rules:

OPS 3.650(i)

OPS 3.660

2.2 The width of the corridor is variable from not safe to conduct operations in the conditions prevailing, to the maximum of 3 minutes wide. A number of factors will, on the day, indicate if it can be used - and how wide it can be. These factors will include but not be restricted to:

a. The meteorological conditions prevailing in the corridor;

b. The instrument fit of the aircraft;

c. The certification of the aircraft - particularly with regard to floats;

d. The sea state;

e. The temperature of the water;

f. The time to rescue; and

g. The survival equipment carried.

These can be broadly divided into three functional groups:

Those which meet the requirement for safe flying - a. and b..

Those which meet the requirement for a safe forced landing and evacuation - a., b., c. and d.

Those which meet the requirement for survival following a forced landing and successful evacuation - a., d., e., f. and g..

3 Requirement for safe flying

3.1 It is generally recognised that when flying out of sight of land in certain meteorological conditions, such as occur in high pressure weather patterns (goldfish bowl - no horizon, light winds and low visibility), the absence of a basic panel (and training) can lead to disorientation. In addition, lack of depth perception in these conditions demands the use of a radio altimeter with an audio voice warning as an added safety benefit - particularly when autorotation to the surface of the water may be required.

3.2 In these conditions a helicopter, without the required instruments and radio altimeter, should be confined to a corridor in which a pilot can maintain reference using the visual cues on the land.

4 Requirement for a safe forced landing and evacuation

4.1 Weather and sea state both affect the outcome of an autorotation following an engine failure. It is recognised that the measurement of sea state is problematical and when assessing such conditions, good judgement has to be exercised by the operator and the commander.

4.2 Where floats have been certificated only for emergency use (and not for ditching), operations must be limited to those sea states which meet the requirement for such use - where a safe evacuation is possible.

(Ditching certification requires compliance with a comprehensive number of requirements relating to rotorcraft water entry, flotation and trim, occupant egress and occupant survival. Emergency flotation systems, generally fitted to smaller FAA Part 27 rotorcraft, are approved against a broad requirement that the equipment must perform its intended function and not hazard the rotorcraft or its occupants. In practice, the most significant difference between ditching and emergency flotation systems is substantiation of the water entry phase. Ditching requirements call for water entry procedures and techniques to be established and promulgated in the Flight Manual. The fuselage/flotation equipment must thereafter be shown to be able to withstand loads under defined water entry conditions which relate to these procedures. For emergency flotation equipment, there is no requirement to define the water entry technique and no specific conditions defined for the structural substantiation.)

5 Requirements for survival

5.1 Survival of crew members and passengers, following a successful autorotation and evacuation, is dependent on the clothing worn, the equipment carried and worn, the temperature of the sea and the sea state (see AMC OPS 3.827). Search and rescue response/capability consistent with the anticipated exposure should be available before the conditions in the corridor can be considered non-hostile.

5.2 Coastal Transit can be conducted providing the requirements of paragraph 3 and 4 are met, and the conditions for a non-hostile coastal corridor are satisfied.

AMC OPS 3.243
Operations in Areas with Specific Navigation Performance Requirements
See OPS 3.243

1 The requirements and procedures relating to areas in which minimum navigation performance specifications are prescribed, based on Regional Air Navigation Agreements, are covered (as indicated for the type of navigation performance specification) in the following documentation:

a. RNP information and associated procedures - ICAO DOC 9613; and
b. EUROCONTROL Standards on Area Navigation to comply with RNP/RNAV.
c. For general guidance refer to Performance Based Navigation Manual - ICAO Doc 9613

2 The following explanatory material has been developed to explain the subject of Required Navigation Performance (RNP) more fully:

a. Objective of RNP - The RNP concept will replace the conventional method of ensuring required navigation performance by requiring the carriage of specific navigation equipment by worldwide, uniform standards of navigation performance for defined airspace and/or flight procedures. It is therefore up to the operator to decide which system(s) he will utilise to meet the requirements. However, the operator must ensure that the system(s) used is certificated for operations in the airspace concerned.

b. Navigational Accuracy - RNP is defined as a statement of the navigational accuracy required for operation within a defined area of airspace. Navigational accuracy is based upon a combination of navigation sensor error, airborne sensor error, display error and flight technical error in the horizontal plane. The level of accuracy is expressed as a single parameter and it defines the distance from helicopter's intended position within which the aircraft must be maintained for at least 95% of the total flying time. As an example, RNP 4 means that all aircraft remain within 4 nm of their intended positions for at least 95% of the total flying time.

c. PBN for En-Route Operations - In order to consider the requirements for performance-based navigation for various areas of airspace and/or routes, RNP types have been defined for worldwide, uniform application in en-route operations as follows:

i. RNP 1 requires highly accurate position information and will be associated with high-density continental traffic. Full exploitation of the benefits of RNP 1 (in connection with area navigation (RNAV)) will require that a high percentage of aircraft achieves this level of navigation performance.

ii. RNP 4 will normally be applied in continental areas in which the route structure is presently based on VOR/DME.

AMC OPS 3.250
Establishment of Minimum Flight Altitudes
See OPS 3.250

1 The following are examples of some of the methods available for calculating minimum flight altitudes.

2 KSS Formula

2.1 Minimum obstacle clearance altitude (MOCA). MOCA is the sum of:

a. The maximum terrain or obstacle elevation whichever is highest; plus

b. 1 000 ft for elevation up to and including 6 000 ft; or

c. 2 000 ft for elevation exceeding 6 000 ft rounded up to the next 100 ft.

2.1.1 The lowest MOCA to be indicated is 2 000 ft.

2.1.2 From a VOR station, the corridor width is defined as a borderline starting 5 nm either side of the VOR, diverging 4° from centreline until a width of 20 nm is reached at 70 nm out, thence paralleling the centreline until 140 nm out, thence again diverging 4° until a maximum width of 40 nm is reached at 280 nm out. Thereafter the width remains constant.(refer to Figure 1)

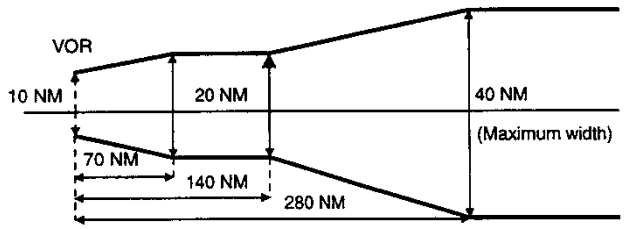


FIGURE 1

2.1.3 From an NDB, similarly, the corridor width is defined as a borderline starting 5 nm either side of the NDB diverging 7° until a width of 20 nm is reached 40 nm out, thence paralleling the centreline until 80 nm out, thence again diverging 7° until a maximum width of 60 nm is reached 245 nm out. Thereafter the width remains constant. (refer to Figure 2)

2.1.4 MOCA does not cover any overlapping of the corridor.

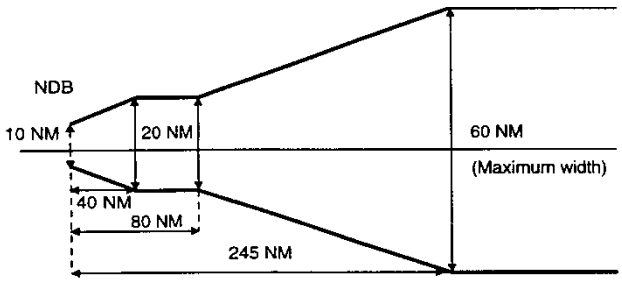


FIGURE 2

2.2 Minimum off–route altitude (MORA). MORA is calculated for an area bounded by every or every second LAT/LONG square on the Route Facility Chart (RFC)/Terminal Approach Chart (TAC) and is based on a terrain clearance as follows:

a. Terrain with elevation up to 6 000 ft (2 000 m) – 1 000 ft above the highest terrain and obstructions;

b. Terrain with elevation above 6 000 ft (2 000 m) – 2 000 ft above the highest terrain and obstructions.

3 Jeppesen Formula

3.1 MORA is a minimum flight altitude computed by Jeppesen from current ONC or WAC charts. Two types of MORAs are charted which are:

a. Route MORAs e.g. 9800a; and

b. Grid MORAs e.g. 98.

3.2 Route MORA values are computed on the basis of an area extending 10 nm to either side of route centreline and including a 10 nm radius beyond the radio fix/reporting point or mileage break defining the route segment.

3.3 MORA values clear all terrain and man–made obstacles by 1 000 ft in areas where the highest terrain elevation or obstacles are up to 5 000 ft. A clearance of 2 000 ft is provided above all terrain or obstacles which are 5 001 ft and above.

3.4 A Grid MORA is an altitude computed by Jeppesen and the values are shown within each Grid formed by charted lines of latitude and longitude. Figures are shown in thousands and hundreds of feet (omitting the last two digits so as to avoid chart congestion). Values followed by ± are believed not to exceed the altitudes shown. The same clearance criteria as explained in paragraph 3.3 above apply.

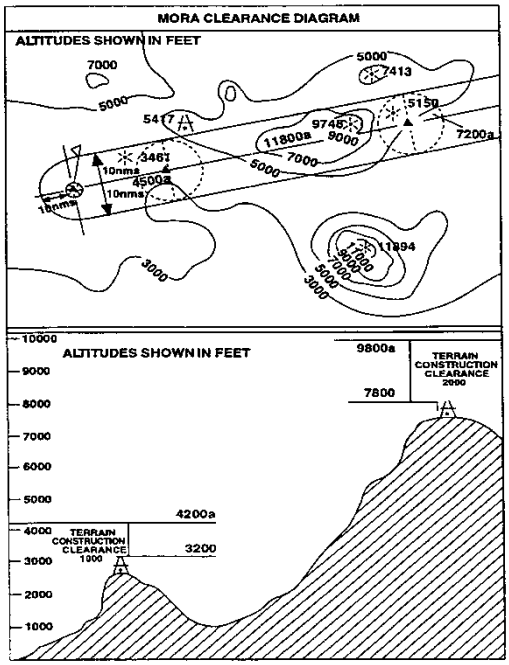


FIGURE 3

4 ATLAS Formula

4.1 Minimum safe En–route Altitude (MEA). Calculation of the MEA is based on the elevation of the highest point along the route segment concerned (extending from navigational aid to navigational aid) within a distance on either side of track as specified below:

a. Segment length up to 100 nm – 10 nm (See Note 1 below).

b. Segment length more than 100 nm – 10% of the segment length up to a maximum of 60 nm See Note 2 below).

Note 1: This distance may be reduced to 5 nm within TMAs where, due to the number and type of available navigational aids, a high degree of navigational accuracy is warranted.

Note 2: In exceptional cases, where this calculation results in an operationally impracticable value, an additional special MEA may be calculated based on a distance of not less than 10 nm either side of track. Such special MEA will be shown together with an indication of the actual width of protected airspace.

4.2 The MEA is calculated by adding an increment to the elevation specified above as appropriate:

Elevation of highest point	Increment
Not above 5 000 ft	1 500 ft
Above 5 000 ft but not above 10000 ft	2 000 ft
Above 10000 ft	10% of elevation plus 1 000 ft

NOTE: For the last route segment ending over the initial approach fix, a reduction to 1 000 ft is permissible within TMAs where, due to the number and type of available navigation aids, a high degree of navigational accuracy is warranted.

The resulting value is adjusted to the nearest 100 ft.

4.3 Minimum safe Grid Altitude (MGA). Calculation of the MGA is based on the elevation of the highest point within the respective grid area.

The MGA is calculated by adding an increment to the elevation specified above as appropriate:

Elevation of highest point	Increment
Not above 5 000 ft	1 500 ft
Above 5 000 ft but not above 10000 ft	2 000 ft
Above 10000 ft	10% of elevation plus 1 000 ft

The resulting value is adjusted to the nearest 100 ft.

AMC OPS 3.255
Fuel Policy
See OPS 3.255

The operator should base the company fuel policy, including calculation of the amount of fuel to be carried, on the following planning criteria:

1 The amount of:

1.1 Taxi fuel, which should not be less than the amount, expected to be used prior to take-off. Local conditions at the departure heliport and APU consumption should be taken into account.

1.2 Trip fuel, which should include:

a. Fuel for take-off and climb from heliport elevation to initial cruising level/altitude, taking into account the expected departure routing;

b. Fuel from top of climb to top of descent, including any step climb/descent;

c. Fuel from top of descent to the point where the approach procedure is initiated, taking into account the expected arrival procedure; and

d. Fuel for approach and landing at the destination heliport.

1.3 Contingency fuel, which should be:

a. For IFR flights, or for VFR flights in a hostile environment, 10% of the planned trip fuel; or

b. For VFR flights in a non-hostile environment, 5% of the planned trip fuel;

1.4 Alternate fuel, which should be:

a. Fuel for a missed approach from the applicable MDA/DH at the destination heliport to missed approach altitude, taking into account the complete missed approach procedure;

b. Fuel for a climb from missed approach altitude to cruising level/altitude;

c. Fuel for the cruise from top of climb to top of descent;

d. Fuel for descent from top of descent to the point where the approach is initiated, taking into account the expected arrival procedure; and

e. Fuel for executing an approach and landing at the destination alternate heliport selected in accordance with OPS 3.295.

f. For helicopters operating to or from helidecks located in a hostile environment, 10% of a. to e. above.

1.5 Final reserve fuel, which is:

a. For VFR flights navigating by day with reference to visual landmarks, 20 minutes fuel at best range speed; or

b. For IFR flights or when flying VFR and navigating by means other than by reference to visual landmarks or at night, fuel to fly for 30 minutes at holding speed at 1 500 ft (450 m) above the destination heliport in standard conditions calculated with the estimated mass on arrival above the alternate, or the destination, when no alternate is required.

1.6 Extra fuel, which should be at the discretion of the commander.

2 Isolated heliport IFR procedure. If the operator's fuel policy includes planning to an isolated heliport flying IFR, or when flying VFR and navigating by means other than by reference to visual landmarks, for which a destination alternate does not exist, the amount of fuel at departure should include:

a. Taxi fuel;

b. Trip fuel;

c. Contingency fuel calculated in accordance with sub-paragraph 1.3 above;

d. Additional fuel to fly for two hours at holding speed including final reserve fuel; and

e. Extra fuel at the discretion of the commander.

3 Sufficient fuel should be carried at all times to ensure that following the failure of a power unit which occurs at the most critical point along the route, the helicopter is able to:

a. Descend as necessary and proceed to an adequate heliport; and

b. Hold there for 15 minutes at 1 500 ft (450 m) above heliport elevation in standard conditions; and

c. Make an approach and landing. (See AMC OPS 3.500(a)(5) and AMC OPS 3.530(a)(5)).

AMC OPS 3.255
Contingency Fuel
See OPS 3.255

1 At the planning stage, not all factors which could have an influence on the fuel consumption to the destination heliport can be foreseen. Therefore, contingency fuel is carried to compensate for items such as:

a. Deviations of an individual helicopter from the expected fuel consumption data;

b. Deviations from forecast meteorological conditions; and

c. Deviations from planned routings and/or cruising levels/altitudes.

AMC OPS 3.260
Carriage of persons with Reduced Mobility
See OPS 3.260

1 A person with reduced mobility (PRM) is understood to mean a person whose mobility is reduced due to physical incapacity (sensory or locomotory), an intellectual deficiency, age, illness or any other cause of disability when using transport and when the situation needs special attention and the adaptation to a person's need of the service made available to all passengers.

2 In normal circumstances PRMs should not be seated adjacent to an emergency exit.

3 In circumstances in which the number of PRMs forms a significant proportion of the total number of passengers carried on board:

a. The number of PRMs should not exceed the number of able-bodied persons capable of assisting with an emergency evacuation; and

b. The guidance given in paragraph 2 above should be followed to the maximum extent possible.

AMC OPS 3.270
Cargo Carriage in the Passenger Cabin
See OPS 3.270

1 In establishing procedures for the carriage of cargo in the passenger cabin of a helicopter, the operator should observe the following:

a. That the weight of the cargo does not exceed the structural loading limit(s) of the cabin floor or seat(s);

b. That the number/type of restraint devices and their attachment points should be capable of restraining the cargo in accordance with CS-29.787 or equivalent;

c. That the location of the cargo should be such that, in the event of an emergency evacuation, it will not hinder egress nor impair the cabin crew’s view.

AC No. 1 to OPS 3.280
Passenger Seating
See OPS 3.280
See AC No. 2 to OPS 3.280

1 The operator should make provision so that:

a. Those passengers who are allocated seats which permit direct access to emergency exits, appear to be reasonably fit, strong and able to assist the rapid evacuation of the helicopter in an emergency after an appropriate briefing by the crew;

b. In all cases, passengers who, because of their condition, might hinder other passengers during an evacuation or who might impede the crew in carrying out their duties, should not be allocated seats which permit direct access to emergency exits. If the operator is unable to establish procedures which can be implemented at the time of passenger ‘check-in’, he should establish an alternative procedure acceptable to the Authority that the correct seat allocations will, in due course, be made.

2 The above text does not apply to helicopters where the normal exit also serves as an emergency exit. However in these circumstances, the operator should apply discretion when choosing passengers to sit next to a normal exit to ensure that evacuation is not hindered in the case of an emergency.

AC No. 2 to OPS 3.280
Passenger Seating
See OPS 3.280
See AC No. 1 to OPS 3.280

1 The following categories of passengers are among those who should not be allocated to, or directed to seats which permit direct access to emergency exits:

a. Passengers suffering from obvious physical, or mental, handicap to the extent that they would have difficulty in moving quickly if asked to do so;

b. Passengers who are either substantially blind or substantially deaf to the extent that they might not readily assimilate printed or verbal instructions given;

c. Passengers who because of age or sickness are so frail that they have difficulty in moving quickly;

d. Passengers who are so obese that they would have difficulty in moving quickly or reaching and passing through the adjacent emergency exit;

e. Children (whether accompanied or not) and infants;

f. Deportees or persons in custody; and,

g. Passengers with animals.

Note: "Direct access" means a seat from which a passenger can proceed directly to the exit without entering an aisle or passing around an obstruction.

AMC OPS 3.295(c)(1)
Selection of Heliports
See OPS 3.295(c)(1)

1 Any alleviation from the requirement to select an alternate heliport for a flight to a coastal heliport is applicable only to helicopters routing from offshore, and should be based on an individual safety case assessment.

2 The following should be taken into account:

2.1. Suitability of the weather based on the landing forecast for the destination;

2.2. The fuel required to meet the requirements of OPS 3.255 less alternate fuel;

2.3. Where the destination coastal heliport is not directly on the coast it should be:

a. Within a distance that, with the fuel specified in 2.2. above, the helicopter can, at any time after crossing the coastline, return to the coast, descend safely and carry out a visual approach and landing with VFR fuel reserves intact, and

b. Geographically sited so that the helicopter can, within the Rules of the Air stated in CAR OPS 0, and within the landing forecast:

i. proceed inbound from the coast at 500 ft AGL and carry out a visual approach and landing; or

ii. proceed inbound from the coast on an agreed route and carry out a visual approach and landing.

2.4. Procedures for coastal heliports should be based on a landing forecast no worse than:

a. By Day. A cloud base of DH/MDH + 400ft, and a visibility of 4km, or, if descent over the sea is intended, a cloud base of 600ft and a visibility of 4km.

b. By Night. A cloud base of 1 000ft and a visibility of 5km.

2.5. The descent to establish visual contact with the surface should take place over the sea or as part of the instrument approach;

2.6. Routings and procedures for coastal heliports nominated as such should be included in the Operations Manual Part C - Route and Heliport Instructions and Information;

2.7. The MEL should reflect the requirement for Airborne Radar and Radio Altimeter for this type of operation;

2.8. Operational limitations for each coastal heliport should be acceptable to the Authority.

AMC OPS 3.295(c)(1)
Selection of Heliports
See OPS 3.395(c)(1)

1 The procedures contained in AMC OPS 3.295(c)(1) are weather critical. Consequently, a “Landing forecast” conforming to the standards contained in the Regional Air Navigation Plan and ICAO Annex 3 has been specified.

2 The “Landing forecast” consists of a concise statement of the mean or average meteorological conditions expected at an aerodrome or heliport during the two-hour period immediately following the time of issue. It contains surface wind, visibility, significant weather and cloud elements, and may contain other significant information, such as barometric pressure and temperature, as agreed between the meteorological authority and the operators concerned.

3 The detailed description of the landing forecast is promulgated in the ICAO Regional Air Navigation Plan and also in ICAO Annex 3, together with the operationally desirable accuracy of the forecast elements. In particular, the value of the observed cloud height and visibility elements should remain within the +/-30% of the forecast values in 90% of the cases.

4 The landing forecast most commonly takes the form of a routine or special selected meteorological report in the METAR code to which a TREND is added. The code words “NOSIG”, i.e. no significant change expected; “BECMG” (becoming); or “TEMPO” (temporarily); followed by the expected change, are used. The two-hour period of validity of the forecast commences at the time of the meteorological report.

AMC OPS 3.295 (e)
Selection of Heliports
See OPS 3.295 (e)

1 Offshore alternate deck landing environment

The 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 wind direction and strength, and turbulence established. This information, which should be available to the Commander at the planning stage and in flight, should be published in an appropriate form in the Operations Manual Part C (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.

2 Performance considerations

The use of an Offshore Alternate is restricted to helicopters which 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 hover (IGE), OEI Out of Ground Effect (OGE) hover performance at an appropriate power rating should be used to compute the landing mass. The landing mass should be calculated from graphs provided in the relevant Part B of the Operations Manual. (When arriving at this landing mass, due account should be taken of helicopter configuration, environmental conditions and the operation of systems which have an adverse effect on performance.) The planned landing mass of the helicopter including crew, passengers, baggage, cargo plus 30 minutes Final Reserve fuel, should not exceed the OEI landing mass at the time of approach to the Offshore alternate.

3 Weather considerations

3.1 Meteorological Observations

When the use of an Offshore Alternate is planned, the meteorological observations at the destination and alternate should be taken by an Observer acceptable to the Authority responsible for the provision of meteorological services. (Automatic meteorological observations stations may be used if acceptable).

3.2 Weather Minima

When the use of an Offshore alternate is planned, the operator should not select a helideck as a destination or offshore alternate unless the aerodrome forecast, indicates that, during a period commencing one hour before and ending one hour after the expected time of arrival at the destination and offshore alternate, the weather conditions will be at or above the planning minima shown in Table 1 below.

Table 1

	Day	Night
Cloud Base	600 ft	800 ft
Visibility	4 km	5 km

3.3 Conditions of Fog

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.

4 Actions at Point of No Return

Before passing the Point of No Return - which should not be more that 30 minutes from the destination - the following actions should have been completed:

4.1 Confirmation that navigation to the destination and offshore alternate can be assured.

4.2 Radio contact with the destination and offshore alternate (or master station) has been established.

4.3. The landing forecast at the destination and offshore alternate have been obtained and confirmed to be at or above the required minima.

4.4 The requirements for One Engine Inoperative landing (see paragraph 2 above) have been checked (in light of the latest reported weather conditions) to ensure that they can be met.

4.5 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 duty holder (the rig operator in the case of fixed installations and the owner in the case of mobiles) until the landing at the destination, or the offshore alternate, has been achieved (or until offshore shuttling has been completed).

5 Offshore shuttling

Provided that the actions in paragraph 4 above have been completed, offshore shuttling, using an offshore alternate, may be carried out.

AMC OPS 3.295(e)
Off-shore Alternates
See OPS 3.295(e)

When operating off shore, any spare payload capacity should be used to carry additional fuel if it would facilitate the use of an onshore alternate.

AMC OPS 3.295(e)(4)
Selection of Heliports - Landing Forecast
See OPS 3.295(e)(4)

1 The procedures contained in AMC OPS 3.295(e) are weather critical. Consequently, meteorological data conforming to the standards contained in the Regional Air Navigation Plan and ICAO Annex 3 has been specified. As the following meteorological data is point specific, caution should be exercised when associating it with nearby heliports (or helidecks).

2 Meteorological Reports (METARs)

2.1 Routine and special meteorological observations at offshore installations should be made during periods and at a frequency agreed between the meteorological authority and the operator concerned. They should comply with the requirements contained in the meteorological section of the ICAO Regional Air Navigation Plan, and should conform to the standards and recommended practices, including the desirable accuracy of observations, promulgated in ICAO Annex 3.

2.2 Routine and selected special reports are exchanged between meteorological offices in the METAR or SPECI code forms prescribed by the World Meteorological Organisation.

3 Aerodrome Forecasts (TAFS)

3.1 The aerodrome forecast consists of a concise statement of the mean or average meteorological conditions expected at an aerodrome or heliport during a specified period of validity, which is normally not less than 9 hours, or more than 24 hours in duration. The forecast includes surface wind, visibility, weather and cloud, and expected changes of one or more of these elements during the period. Additional elements may be included as agreed between the meteorological authority and the operators concerned. Where these forecasts relate to offshore installations, barometric pressure and temperature should be included to facilitate the planning of helicopter landing and take-off performance.

3.2 Aerodrome forecasts are most commonly exchanged in the TAF code form, and the detailed description of an aerodrome forecast is promulgated in the ICAO Regional Air Navigation Plan and also in ICAO Annex 3, together with the operationally desirable accuracy elements. In particular, the observed cloud height should remain within +/- 30% of the forecast value in 70% of cases, and the observed visibility should remain within +/- 30% of the forecast value in 80% 0f cases.

4 Landing Forecasts (TRENDS)

4.1 The landing forecast consists of a concise statement of the mean or average meteorological conditions expected at an aerodrome or heliport during the two-hour period immediately following the time of issue. It contains surface wind, visibility, significant weather and cloud elements, and other significant information, such as barometric pressure and temperature, as may be agreed between the meteorological authority and the operators concerned.

4.2 The detailed description of the landing forecast is promulgated in the ICAO Regional Air Navigation Plan and also in ICAO Annex 3, together with the operationally desirable accuracy of the forecast elements. In particular, the value of the observed cloud height and visibility elements should remain within +/-30% of the forecast values in 90% of the cases.

4.3 Landing forecasts most commonly take the form of routine or special selected meteorological reports in the METAR code, to which either the code words “NOSIG”, i.e. no significant change expected; “BECMG” (becoming), or “TEMPO” (temporarily), followed by the expected change, are added. The two-hour period of validity commences at the time of the meteorological report.

AMC OPS 3.300
Submission of ATS Flight Plan
See OPS 3.300

1 Flights without ATS flight plan. When unable to submit or to close the ATS flight plan due to lack of ATS facilities or any other means of communications to ATS, the operator should establish procedures, instructions and a list of authorised persons to be responsible for alerting search and rescue services.

2 To ensure that each flight is located at all times, these instructions should:

a. Provide the authorised person with at least the information required to be included in a VFR Flight plan, and the location, date and estimated time for re-establishing communications;

b. If an aircraft is overdue or missing, provide for notification to the appropriate ATS or Search and Rescue facility; and

c. Provide that the information will be retained at a designated place until the completion of the flight.

AMC OPS 3.305
Refuelling with Passengers Embarking, On-board or Disembarking
See OPS 3.305

When refuelling with passengers on board, ground servicing activities and work inside the helicopter, such as catering and cleaning, should be conducted in such a manner that they do not create a hazard and that the aisles and emergency doors are unobstructed.

AMC OPS 3.307
Refuelling/Defuelling with Wide-cut Fuel
See OPS 3.307

1 'Wide-cut fuel' (designated JET B, JP-4 or AVTAG) is an aviation turbine fuel that falls between gasoline and kerosene in the distillation range and consequently, compared to kerosene (JET A or JET A1), it has properties of higher volatility (vapour pressure), lower flash point and lower freezing point.

2 Wherever possible, the operator should avoid the use of wide-cut fuel types. If a situation arises such that only wide-cut fuels are available for refuelling/defueling, operators should be aware that mixtures of wide-cut fuels and kerosene turbine fuels can result in the air/fuel mixture in the tank being in the combustible range at ambient temperatures. The extra precautions set out below are advisable to avoid arcing in the tank due to electrostatic discharge. The risk of this type of arcing can be minimised by the use of static dissipation additive in the fuel. When this additive is present in the proportions stated in the fuel specification, the normal fuelling precautions set out below are considered adequate.

3 Wide-cut fuel is considered to be “involved” when it is being supplied or when it is already present in aircraft fuel tanks.

4 When wide-cut fuel has been used, this should be recorded in the Technical Log. The next two uplifts of fuel should be treated as though they too involved the use of wide-cut fuel.

5 When refuelling/defueling with turbine fuels not containing a static dissipator, and where wide-cut fuels are involved, a substantial reduction in fuelling flow rate is advisable. Reduced flow rate, as recommended by fuel suppliers and/or helicopter manufacturers, has the following benefits:

a. It allows more time for any static charge build-up in the fuelling equipment to dissipate before the fuel enters the tank;

b. It reduces any charge which may build up due to splashing; and

c. Until the fuel inlet point is immersed, it reduces misting in the tank and consequently the extension of the flammable range of the fuel.

6 The flow rate reduction necessary is dependent upon the fuelling equipment in use and the type of filtration employed on the helicopter fuelling distribution system. It is difficult, therefore, to quote precise flow rates. Reduction in flow rate is advisable when pressure fuelling is employed.

AMC OPS 3.310(b)
Cabin crew Seating Positions
See OPS 3.310(b)

1 When determining cabin crew seating positions, the operator should ensure that they are:

a. Close to a floor level exit;

b. Provided with a good view of the area(s) of the passenger cabin for which the cabin crew member is responsible; and

c. Evenly distributed throughout the cabin, in the above order of priority.

2 Paragraph 1 above should not be taken as implying that, in the event of there being more such cabin crew stations than required cabin crew, the number of cabin crew members should be increased.

AC OPS 3.346
Flight in Expected or Actual Icing Conditions
See OPS 3.346

1 The procedures to be established by the operator should take account of the design, the equipment or the configuration of the helicopter and also of the training which is needed. For these reasons, different helicopter types operated by the same company may require the development of different procedures. In every case, the relevant limitations are those which are defined in the Helicopter Flight Manual (HFM) and other documents produced by the manufacturer.

2 For the required entries in the Operations Manual, the procedural principles which apply to flight in icing conditions are referred to under Appendix 1 to OPS 3.1045, A 8.3.8 and should be cross-referenced, where necessary, to supplementary, type-specific data under Appendix 1 to OPS 3.1045, B 4.1.

3 Technical content of the Procedures. The operator should ensure that the procedures take account of the following:

a. OPS 3.675;

b. The equipment and instruments which must be serviceable for flight in icing conditions;

c. The limitations on flight in icing conditions for each phase of flight. These limitations may be imposed by the helicopter's de-icing or anti-icing equipment or the necessary performance corrections which have to be made;

d. The criteria the Flight Crew should use to assess the effect of icing on the performance and/or controllability of the helicopter;

e. The means by which the Flight Crew detects, by visual cues or the use of the helicopter's ice detection system, that the flight is entering icing conditions; and

f. The action to be taken by the Flight Crew in a deteriorating situation (which may develop rapidly) resulting in an adverse effect on the performance and/or controllability of the helicopter, due to either:

i. the failure of the helicopter's anti-icing or de-icing equipment to control a build-up of ice, and/or

ii. ice build-up on unprotected areas.

4 Training for despatch and flight in expected or actual icing conditions. The content of the Operations Manual, Part D, should reflect the training, both conversion and recurrent, which Flight Crew, and all other relevant operational personnel will require in order to comply with the procedures for despatch and flight in icing conditions.

4.1 For the Flight Crew, the training should include:

a. Instruction in how to recognise, from weather reports or forecasts which are available before flight commences or during flight, the risks of encountering icing conditions along the planned route and on how to modify, as necessary, the departure and in-flight routes or profiles;

b. Instruction in the operational and performance limitations or margins;

c. The use of in-flight ice detection, anti-icing and de-icing systems in both normal and abnormal operation; and

d. Instruction in the differing intensities and forms of ice accretion and the consequent action which should be taken.

4.2 For Crew members other than flight crew, the training should include;

a. Awareness of the conditions likely to produce surface contamination; and

b. The need to inform the Flight Crew of significant ice accretion.

AC OPS 3.398
Airborne Collision Avoidance Systems (ACAS)
See OPS 3.398

1 Purpose

1.1 The purpose of this AC is to provide guidance to operators of aircraft that carry airborne collision avoidance systems (ACAS I) equipment. It includes information on the capabilities and limitations of the equipment, and the traffic advisories (TAs) it may generate, together with advice concerning the appropriate flight crew response. Information is also provided on details that should be included in checklists, and in Operations and Training Manuals.

1.2 A list of definitions is provided in Appendix A to this AC.

2 General

2.1 Notwithstanding that a flight may be made with an air traffic control clearance, it remains the duty of a commander to take all possible measures to ensure that his aircraft does not collide with any other aircraft. Information from an air traffic control (ATC) system may be available, but this may do no more than provide advice as to the proximity of an aircraft that is perceived to constitute a potential threat and, possibly, advise the commander as to how he might best manoeuvre his aircraft to avoid it.

ACAS provides flight crew with an independent back up to visual search and the ATC system by alerting them to collision hazards.

As helicopter performance generally cannot comply with the avoidance criteria present in the algorithms for ACAS II, Resolution Advisories (RAs) and RA avoidance techniques are not covered by this AC. Unless otherwise stated in this document the term ‘ACAS’ refers to ACAS 1 systems

3 Examples of Limitations of ACAS Equipment

3.1 Dependence on Active Transponder Equipment

As ACAS relies upon information received from airborne transponders, it cannot detect the presence of aircraft whose transponders are unserviceable or which have not been selected to operate. TAs will not be produced in such circumstances, and they will not be produced in respect of any aircraft that does not carry transponder equipment, or one whose equipment is incompatible with the international standard.

3.2 Limited Capability

ACAS equipment is not capable of resolving the bearing, heading or vertical rates of intruders accurately. For this reason, pilots should not attempt to manoeuvre solely on the basis of TA information (for example in IMC).

3.3 Dependence on Altitude-Reporting Transponder Equipment

As a comparison cannot be made of both the intruder and the subject aircraft’s altitudes or flight levels, ACAS is not dependent on Altitude-Reporting Transponder equipment (SSR Mode C or S). However a TA will be produced, if appropriate, in these circumstances. If this should occur, flight crew should not delay making a visual search supplemented, if the potential threat cannot be seen and gives cause for concern, with a request for assistance from ATC to help them to decide whether a change of flight path should be made.

3.5 False and Nuisance TAs

ACAS may generate false and nuisance TAs under normal and safe operating conditions.

3.5.1 False TAs may occur as a result of deficiencies in the equipment or data with which it is provided.

3.5.2 Nuisance TAs may occur if aircraft flight paths are computed by ACAS to result in potential conflicts, but the advisories are perceived by flight crew to be unwarranted due to:

a) the intended change of flight path of either aircraft or,

b) the observance that adequate separation exists and that it is being maintained by both aircraft.

TAs should be treated as genuine unless the intruder has been positively identified and assessed as constituting neither a threat nor a hazard.

3.6 Operating Limits

3.6.1 ACAS will be inhibited from producing a full range of TAs in such circumstances of flight as are outside the minimum altitudes specified for operation of the equipment. For this reason, flight crew should be aware of when ACAS will not provide a full range of TA information.

3.7 ACAS II Requirements versus Helicopter Performance

3.7.1 ACAS II relies on altitude reporting information from a SSR transponder transmitting in Mode C or Mode S. The resulting altitude deviations require minimum performance criteria to resolve the Resolution Advisory generated by the ACAS II software algorithms. For example the minimum rate of closing speed below Flight Level (FL) 100 is 480 knots, and the minimum Rate of Climb or Descent (RCOD) is 1 500 ft/MIN. Helicopters and most small fixed-wing aircraft cannot comply with these performance criteria and therefore installation of ACAS II (or ACAS III) will not be mandated for these types in the future.

4 Operations Manuals and Checklists

4.1 Operations Manuals should contain, in their introduction to ACAS, information similar to that given in Section 2 above. It should be emphasised that ACAS is not to be regarded as a substitute for the visual search expected to be maintained by flight crew, nor is it intended to replace a clearance given by ATC.

4.2 Technical details of the system should at least contain brief descriptions of:

Input sources, with reference to TAs;

Audio and visual indications of TAs.

Equipment limitations.

4.3 Operational instructions should specify what checks flight crew should carry out prior to take-off to ensure that the ACAS equipment is serviceable, and the action they should take in the event that abnormal or fault conditions arise on the ground or in the air.

4.4 Minimum Equipment Lists should define a minimum despatch standard on occasions when ACAS may be partially or fully unserviceable. In this respect full account must be taken of any appropriate legislation that may exist, and of recommendations made by the Authority.

4.5 The Operations Manual should state clearly the actions to be taken by crews following receipt of TAs. Section 6 contains detailed guidance. Instructions should take full account of operational constraints consequent upon limitations of the equipment, such as are described in Section 3.

5 Training

5.1 The purpose for which training in the use of ACAS equipment should be provided is to ensure that pilots take appropriate action on receiving TAs.

5.2 Training should provide flight crew with information sufficient to enable them to understand the operation of ACAS equipment, including its capabilities and limitations, and the procedures they must use in response to any advisory information that may be generated.

5.3 The ground-training syllabus should include the following items:

5.3.1 Descriptions of equipment carried on board the aircraft together with associated controls, circuit protections, information displays and all audio and visual indications.

5.3.2 Abnormal or fault conditions, and such corrective or disabling actions as may be required.

5.3.3 Descriptive terms associated with ACAS, and such limitations as necessarily prevent the equipment from providing total protection from approaching aircraft.

5.3.4 The full sequence of events that may follow from the time an intruder aircraft is first determined to exist until such time as, both aircraft are again proceeding on their cleared or intended courses and, if appropriate, at their assigned altitudes or flight levels. Emphasis should be placed on the need to initiate manoeuvres promptly once these are deemed necessary.

5.4 In-flight training covering full ACAS operation including demonstration TAs is impractical. If appropriate a suitably equipped flight simulator is a more desirable way of providing training in the use of ACAS equipment and of providing crew with situations in which they may practice making proper responses.

5.5 Records of training provided and competency achieved should be raised and retained for a period of 2 years.

6 Action to be taken on Receiving TAs

6.1 The purposes of a TA are to alert flight crew to the presence of an intruder aircraft, which could require a change to the flight path of the subject aircraft, and to advise them that they should attempt to sight the potential threat.

6.2 Flight crew should immediately assimilate information provided by the TA, and commence a visual search of that portion of the sky within which the potential threat should be seen. They should prepare to manoeuvre the aircraft if necessary. If the potential threat cannot be seen and gives cause for concern, flight crew should seek advice from ATC.

6.3 If the potential threat is seen and is perceived as likely to result in a definite risk of collision, pilots should manoeuvre their aircraft as necessary ensuring where possible that the sky ahead is clear of other traffic.

6.4 When clear of the potential threat and provided no other conflicts are seen to exist, the aircraft should be returned promptly to its intended flight path and ATC advised of any deviation from an air traffic control clearance.

6.5 Aircraft Management

6.5.1 Operators should emphasise that flight crew should verify to the best of their ability that the airspace in which they intend to manoeuvre is clear of other aircraft, and that they should inform ATC as soon as it is possible to do so of any departure made from an air traffic control clearance.

6.5.2 It should be understood that any deviation from an air traffic control clearance has the potential to cause disruption to the controller's tactical plan, and so might result in a reduction in separation between aircraft other than those originally involved. Therefore it is vital that crews maintain an effective look-out and that they return to their intended flight path as soon as is safe and practical to do so.

Appendix A Definitions

1 ACAS: An acronym for airborne collision avoidance systems.

1.1 ACAS I: An airborne collision avoidance system which utilises interrogations of, and replies from, airborne radar beacon transponders. It provides traffic advisories only.

1.2 ACAS II: An airborne collision avoidance system which utilises interrogations of, and replies from, airborne radar beacon transponders. It provides traffic advisories, and resolution advisories in the vertical plane. Requires specific minimum aircraft performance.

1.3 ACAS III: An airborne collision avoidance system which utilises interrogations of, and replies from, airborne radar beacon transponders. It provides traffic advisories, and resolution advisories in the vertical and horizontal planes. Requires specific minimum aircraft performance.

2 TCAS: An acronym for traffic alert and collision avoidance systems having specific capabilities. TCAS has been developed in the USA to implement ACAS.

Note: When used within this document the terms 'ACAS' and 'TCAS', if not followed by numeric identifiers, are generic and refer to any ACAS 1 or TCAS 1 system respectively.

3 Protected Volume: A volume of airspace enclosing the ACAS aircraft which, when penetrated by or containing an intruder, will normally result in the generation of a traffic advisory or a resolution advisory.

4 Closest Point of Approach (CPA)**:** The occurrence of minimum range between own ACAS aircraft and an intruder. Thus range at closest point of approach is the smallest range between the two aircraft, and time of closest approach is the time at which this occurs.

5 Traffic Advisory (TA): Advisory information provided by ACAS to caution flight crews as to the proximity of a potential threat. It should occur when the time to CPA is sensed by ACAS to have reached a set value, usually 40 seconds.

5.1 Traffic advisories aid visual acquisition, and may include range, altitude, and bearing of the potential threat relative to the ACAS aircraft.

5.2 Traffic advisories without altitude may also be reported from non altitude-reporting transponder Mode A-equipped potential threats.

6 Traffic: An aircraft that has come within the surveillance range of ACAS.

7 Proximate Traffic**:** An aircraft that has come within ± 1 200 ft and 6 nm of ACAS.

8 Intruder: A transponder-equipped aircraft within the surveillance range of ACAS for which ACAS has an established track.

9 Potential Threat: An intruder that has penetrated the TA-protected volume.

10 Co-ordination: The process by which two ACAS-equipped aircraft select compatible RAs by the exchange of resolution advisory complements.

12 Subject Aircraft: The ACAS-equipped aircraft that may need to manoeuvre in order to maintain adequate separation from an established threat.

13 Genuine TA: The equipment provides a TA in accordance with its technical specification.

14 Nuisance TA: The equipment provides a TA in accordance with its technical specification, but no risk of collision exists.

15 False TA: A fault or failure in the system causes the equipment to provide a TA that is not in accordance with its technical specification.

Note: The FAA have published a list of definitions, details of which vary slightly from some of those given above. Others which are likely to be significant are shown below:

a) Alert: An indicator (visual or auditory) which provides information to flight crew in a timely manner about a non-normal situation.

b) Intruder: A target which has satisfied the traffic advisory detection criteria.

AMC OPS 3.400
Approach and Landing Conditions
See OPS 3.400

The in-flight determination of the FATO suitability should be based on the latest available report, preferably not more than 30 minutes before the expected landing time.

AMC OPS 3.420(e)
Dangerous Goods Occurrence Reporting
See OPS 3.420(e)

1 To assist the ground services in preparing for the landing of a helicopter in an emergency situation, it is essential that adequate and accurate information about any dangerous goods on board be given to the appropriate air traffic services unit. Wherever possible this information should include the proper shipping name and/or the UN/ID number, the class/division and for Class 1 the compatibility group, any identified subsidiary risk(s), the quantity and the location on board the helicopter.

2 When it is not considered possible to include all the information, those parts thought most relevant in the circumstances, such as the UN/ID numbers or classes/divisions and quantity, should be given.

AC OPS 3.426
Flight hours Reporting
(See OPS 3.426)

The requirement of OPS 3.426 may be achieved by making available either:

- the flight hours flown by each helicopter – identified by its serial number and registration mark -during the elapsed calendar year; or

- the total flight hours of each helicopter – identified by its serial number and registration mark – on the 31s t of December of the elapsed calendar year.

Where possible, the operator should have available, for each helicopter, the breakdown of hours for CAT, aerial work, general aviation. If the exact hours for the functional activity cannot be established, the estimated proportion will be sufficient.

AC/AMC E

ALL WEATHER OPERATIONS

AMC to Appendix 1 to OPS 3.430(b)(4)
Effect on Landing Minima of Temporarily Failed or Downgraded Ground Equipment
See Appendix 1 to OPS 3.430(b)(4)

1 Introduction

1.1 This provides operators with instructions for flight crews on the effects on landing minima of temporary failures or downgrading of ground equipment.

1.2 Aerodrome facilities are expected to be installed and maintained to the standards prescribed in ICAO Annexes 10 and 14. Any deficiencies are expected to be repaired without unnecessary delay.

2 General. These instructions are intended for use both pre-flight and in-flight. It is not expected however that the commander would consult such instructions after passing the outer marker or equivalent position. If failures of ground aids are announced at such a late stage, the approach could be continued at the commander's discretion. If, however, failures are announced before such a late stage in the approach, their effect on the approach should be considered as described in Tables 1A and 1B below, and the approach may have to be abandoned to allow this to happen.

3 Operations with no Decision Height (DH)

3.1 The operator should ensure that, for helicopters authorised to conduct no DH operations with the lowest RVR limitations, the following applies in addition to the content of Tables 1A and 1B, below:

a. RVR. At least one RVR value must be available at the aerodrome;

b. FATO/runway lights

i. No FATO/runway edge lights, or no centre lights - Day only min RVR 200 m;

ii. No TDZ lights - No restrictions;

iii. No standby power to FATO/runway lights - Day only min RVR 200 m.

4. Conditions applicable to Tables 1A & 1B

a. Multiple failures of FATO/runway lights other than indicated in Table 1B are not acceptable.

b. Deficiencies of approach and FATO/runway lights are treated separately.

c. Category II or III operations. A combination of deficiencies in FATO/runway lights and RVR assessment equipment is not allowed.

d. Failures other than ILS affect RVR only and not DH.

TABLE 1A – Failed or downgraded equipment – effect on landing minima

FAILED OR DOWNGRADED EQUIPMENT	EFFECT ON LANDING MINIMA				
	CAT III B (Note 1)	CAT III A	CAT II	CAT I	NON PRECISION
ILS stand-by transmitter	Not allowed		No effect		
Outer Marker	No effect if replaced by published equivalent position				Not applicable
Middle Marker	No effect				No effect unless used as MAPT
Touch Down Zone RVR assessment system	May be temporarily replaced with midpoint RVR if approved by the State of the Aerodrome. RVR may be reported by human observation			No effect	
Midpoint or Stopend RVR	No effect				
Anemometer for R/W in use	No effect if other ground source available				
Ceilometer	No effect				

Note 1: For Cat IIIB operations with no DH, see also paragraph 3, above.

TABLE 1B – Failed or downgraded equipment – effect on landing minima

FAILED OR DOWNGRADED EQUIPMENT	EFFECT ON LANDING MINIMA				
	CAT III B (Note 1)	CAT III A	CAT II	CAT I	NON PRECISION
Approach lights	Not allowed for operations with DH>50ft		Not allowed	Minima as for nil facilities	
Approach light except the last 210m	No effect		Not allowed	Minima as for nil facilities	
Approach light except the last 420m	No effect			Minima as for intermediate facilities	
Standby power for approach lights	No effect		RVR as for CAT I basic facilities		No effect
While FATO light system	Not allowed			Minima as for basic facilities Day only	
Edge Lights	Day only				
Centreline lights	RVR 300 m Day only		RVR 300 m – day RVR 550 m - night	No effect	
Centreline lights spacing increased to 30 m	RVR 150 m	No effect			
Touch Down Zone lights	RVR 200m – day RVR 300m - night	RVR 300m – day RVR 550m - night		No effect	
Standby power for FATO lights	Not allowed			No effect	
Taxiway light system	No effect – except delays due to reduced movement rate				

Note: For Cat IIIB operations with no DH, see also paragraph 3, above.

AMC Appendix 1 to OPS 3.430
Aerodrome Operating Minima
See Appendix 1 to OPS 3.430

The minima stated in this Appendix are based upon the experience of commonly used approach aids. This is not meant to preclude the use of other guidance systems such as Head Up Display (HUD) and Enhanced Visual Systems (EVS) but the applicable minima for such systems will need to be developed as the need arises.

AMC Appendix 1 to OPS 3.430(a)(3)(i)
Onshore Heliport Departure Procedures
See Appendix 1 to OPS 3.430(a)(3)(i)

The cloud base and visibility should be such as to allow the helicopter to be clear of cloud at TDP, and for the pilot flying to remain in sight of the surface until reaching the minimum speed for flight in IMC given in the HFM.

AMC Appendix 1 to OPS 3.430(d)
Establishment of Minimum RVR for Category II Operations
See Appendix 1 to OPS 3.430(d)

1 General

1.1 When establishing minimum RVR for Category II Operations, operators should pay attention to the following information which originated in ECAC Doc 17 3rd Edition, Subpart A. It is retained as background information and, to some extent, for historical purposes although there may be some conflict with current practices.

1.2 Since the inception of precision approach and landing operations various methods have been devised for the calculation of aerodrome operating minima in terms of decision height and runway visual range. It is a comparatively straightforward matter to establish the decision height for an operation but establishing the minimum RVR to be associated with that decision height so as to provide a high probability that the required visual reference will be available at that decision height has been more of a problem.

1.3 The methods adopted by various States to resolve the DH/RVR relationship in respect of Category II operations have varied considerably; in one instance there has been a simple approach which entailed the application of empirical data based on actual operating experience in a particular environment. This has given satisfactory results for application within the environment for which it was developed. In another instance a more sophisticated method was employed which utilised a fairly complex computer programme to take account of a wide range of variables. However, in the latter case it has been found that with the improvement in the performance of visual aids, and the increased use of automatic equipment in the new larger aircraft, most of the variables cancel each other out and a simple tabulation can be constructed which is applicable to a wide range of aircraft. The basic principles which are observed in establishing the values in such a table are that the scale of visual reference required by a pilot at and below decision height depends on the task that he has to carry out, and that the degree to which his vision is obscured depends on the obscuring medium, the general rule in fog being that it becomes more dense with increase in height. Research using flight simulators coupled with flight trials has shown the following:

a. Most pilots require visual contact to be established about 3 seconds above decision height though it has been observed that this reduces to about 1 second when a fail-operational automatic landing system is being used;

b. To establish lateral position and cross-track velocity most pilots need to see not less than a 3 light segment of the centre line of the approach lights, or runway centre line, or runway edge lights;

c. For roll guidance most pilots need to see a lateral element of the ground pattern, i.e. an approach lighting cross bar, the landing threshold, or a barrette of the touchdown zone lighting;

d. To make an accurate adjustment to the flight path in the vertical plane, such as a flare, using purely visual cues, most pilots need to see a point on the ground which has a low or zero rate of apparent movement relative to the aircraft; and

e. With regard to fog structure, data gathered in the United Kingdom over a twenty-year period have shown that in deep stable fog there is a 90% probability that the slant visual range from eye heights higher than 15 ft above the ground will be less that the horizontal visibility at ground level, i.e. RVR. There are at present no data available to show what the relationship is between the Slant Visual Range and RVR in other low visibility conditions such as blowing snow, dust or heavy rain, but there is some evidence in pilot reports that the lack of contrast between visual aids and the background in such conditions can produce a relationship similar to that observed in fog.

2 Category II Operations

2.1 The selection of the dimensions of the required visual segments which are used for Category II operations is based on the following visual requirements:

a. A visual segment of not less than 90 metres will need to be in view at and below decision height for pilot to be able to monitor an automatic system;

b. A visual segment of not less than 120 metres will need to be in view for a pilot to be able to maintain the roll attitude manually at and below decision height; and

c. For a manual landing using only external visual cues, a visual segment of 225 metres will be required at the height at which flare initiation starts in order to provide the pilot with sight of a point of low relative movement on the ground.

Note: Before using a Category II ILS for automatic landing, the quality of the localiser between 50 ft and touchdown should be verified.

AMC Appendix 1 to OPS 3.430(i)
Airborne Radar Approach (ARA) for Overwater Operations
See Appendix 1 to OPS 3.430(i)

1 General

1.1 The helicopter airborne radar approach procedure (ARA) may have as many as five separate segments. These are the arrival, initial, intermediate, final, and missed approach segments. In addition, the requirements of the circling manoeuvre to a landing under visual conditions should be considered. The individual approach segments can begin and end at designated fixes, however, the segments of an ARA may often begin at specified points where no fixes are available.

1.2 The fixes, or points, are named to coincide with the associated segment. For example, the intermediate segment begins at the Intermediate Fix (IF) and ends at the Final Approach Fix (FAF). Where no fix is available or appropriate, the segments begin and end at specified points; for example, Intermediate Point (IP) and final approach point (FAP). The order in which this AMC discusses the segments is the order in which the pilot would fly them in a complete procedure: that is, from the arrival through initial and intermediate to a final approach and, if necessary, the missed approach.

1.3 Only those segments which are required by local conditions applying at the time of the approach need be included in a procedure. In constructing the procedure, the final approach track, (which should be orientated so as to be substantially into wind) should be identified first as it is the least flexible and most critical of all the segments. When the origin and the orientation of the final approach have been determined, the other necessary segments should be integrated with it to produce an orderly manoeuvring pattern which does not generate an unacceptably high work-load for the flight crew.

1.4 Examples of Airborne Radar Approach procedures, vertical profile and missed approach procedures are contained in Figures 1 to 5.

2 Obstacle environment

2.1 Each segment of the ARA is located in an over-water area which has a flat surface at sea level. However, due to the passage of large vessels which are not required to notify their presence, the exact obstacle environment cannot be determined. As the largest vessels and structures are known to reach elevations exceeding 500 ft amsl, the uncontrolled offshore obstacle environment applying to the arrival, initial and intermediate approach segments can reasonably be assumed to be capable of reaching to at least 500 ft amsl. But, in the case of the final approach and missed approach segments, specific areas are involved within which no radar returns are permitted. In these areas the height of wave crests and the possibility that small obstacles may be present which are not visible on radar, results in an uncontrolled surface environment which extends to an elevation of 50 ft amsl.

2.2 Under normal circumstances, the relationship between the approach procedure and the obstacle environment is governed according to the concept that vertical separation is very easy to apply during the arrival, initial and intermediate segments, while horizontal separation, which is much more difficult to guarantee in an uncontrolled environment, is applied only in the final and missed approach segments.

3 Arrival segment

3.1 The arrival segment commences at the last en-route navigation fix, where the aircraft leaves the helicopter route, and it ends either at the Initial Approach Fix (IAF) or, if no course reversal, or similar manoeuvre is required, it ends at the IF. Standard en-route obstacle clearance criteria should be applied to the arrival segment.

4 Initial approach segment

4.1 The initial approach segment is only required if a course reversal, race track, or arc procedure is necessary to join the intermediate approach track. The segment commences at the IAF and on completion of the manoeuvre ends at the intermediate point (IP). The Minimum Obstacle Clearance (MOC) assigned to the initial approach segment is 1 000 ft.

5 Intermediate approach segment

5.1 The intermediate approach segment commences at the IP, or in the case of "straight in" approaches, where there is no initial approach segment, it commences at the IF. The segment ends at the FAP and should not be less than 2 nm in length. The purpose of the intermediate segment is to align and prepare the helicopter for the final approach. During the intermediate segment the helicopter should be lined up with the final approach track, the speed should be stabilised, the destination should be identified on the radar, and the final approach and missed approach areas should be identified and verified to be clear of radar returns. The MOC assigned to the intermediate segment is 500 ft.

6 Final approach segment

6.1 The final approach segment commences at the FAP and ends at the missed approach point (MAPt). The final approach area, which should be identified on radar, takes the form of a corridor between the FAP and the radar return of the destination. This corridor should not be less than 2 nm wide in order that the projected track of the helicopter does not pass closer than 1 nm to the obstacles lying outside the area.

6.2 On passing the FAP, the helicopter will descend below the intermediate approach altitude, and follow a descent gradient which should not be steeper than 6·5%. At this stage vertical separation from the offshore obstacle environment will be lost. However, within the final approach area, the minimum descent height (MDH), or minimum descent altitude (MDA), will provide separation from the surface environment. Descent from 1 000 ft amsl to 200 ft amsl at a constant 6·5% gradient will involve a horizontal distance of 2 nm. In order to follow the guideline that the procedure should not generate an unacceptably high work-load for the flight crew, the required actions of levelling at MDH, changing heading at the Offset Initiation Point (OIP), and turning away at MAPt should not be planned to occur at the same time. Consequently, the FAP should not normally be located at less than 4 nm from the destination.

6.3 During the final approach, compensation for drift should be applied and the heading which, if maintained, would take the helicopter directly to the destination, should be identified. It follows that, at an OIP located at a range of 1·5 nm, a heading change of 10° is likely to result in a track offset of 15° at 1nm, and the extended centreline of the new track can be expected to have a mean position lying some 300 - 400 metres to one side of the destination structure. The safety margin built in to the 0·75 nm Decision Range (DR) is dependent upon the rate of closure with the destination. Although the airspeed should be in the range 60/90 kt during the final approach, the ground speed, after due allowance for wind velocity, should be no greater than 70 kts.

7 Missed approach segment

7.1 The missed approach segment commences at the MAPt and ends when the helicopter reaches minimum en-route altitude. The missed approach manoeuvre is a "turning missed approach" which must be of not less than 30° and should not, normally, be greater than 45°. A turn away of more than 45° does not reduce the collision risk factor any further, nor will it permit a closer decision range (DR). However, turns of more than 45° may increase the risk of pilot disorientation and, by inhibiting the rate of climb (especially in the case of a one engine inoperative (OEI) go-around), may keep the helicopter at an extremely low level for longer than is desirable.

7.2 The missed approach area to be used should be identified and verified as a clear area on the radar screen during the intermediate approach segment. The base of the missed approach area is a sloping surface at 2·5% gradient starting from MDH at the MAPt. The concept is that a helicopter executing a turning missed approach will be protected by the horizontal boundaries of the missed approach area until vertical separation of more than 130 ft is achieved between the base of the area, and the offshore obstacle environment of 500 ft amsl which prevails outside the area.

7.3 A missed approach area, taking the form of a 45° sector orientated left or right of the final approach track, originating from a point 5 nm short of the destination, and terminating on an arc 3 nm beyond the destination, will normally satisfy the requirements of a 30° turning missed approach.

8 The required visual reference

8.1 The visual reference required is that the destination shall be in view in order that a safe landing may be carried out.

9 Radar equipment

9.1 During the ARA procedure colour mapping radar equipment with a 120° sector scan and 2·5 nm range scale selected, may result in dynamic errors of the following order:

a. bearing/tracking error ± 4·5° with 95% accuracy;

b. mean ranging error - 250 m;

c. random ranging error ± 250 m with 95% accuracy.

Figure 1 - Arc Procedure

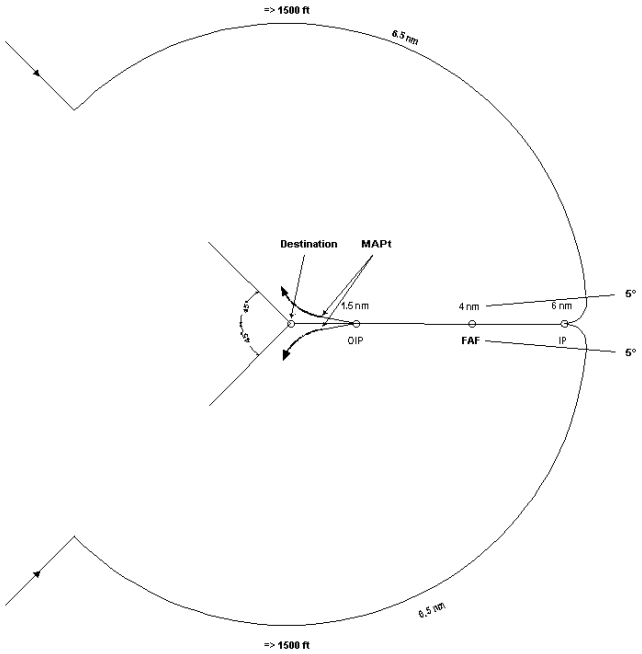


Figure 2 - Base Turn Procedure - Direct Approach

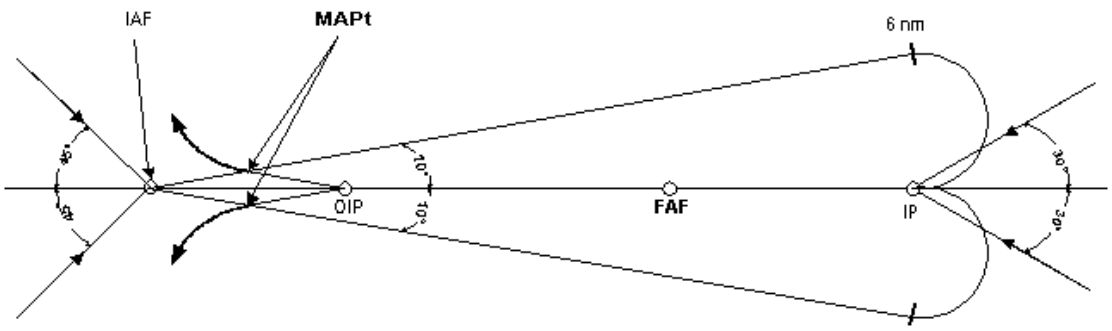


Figure 3 - Vertical Profile

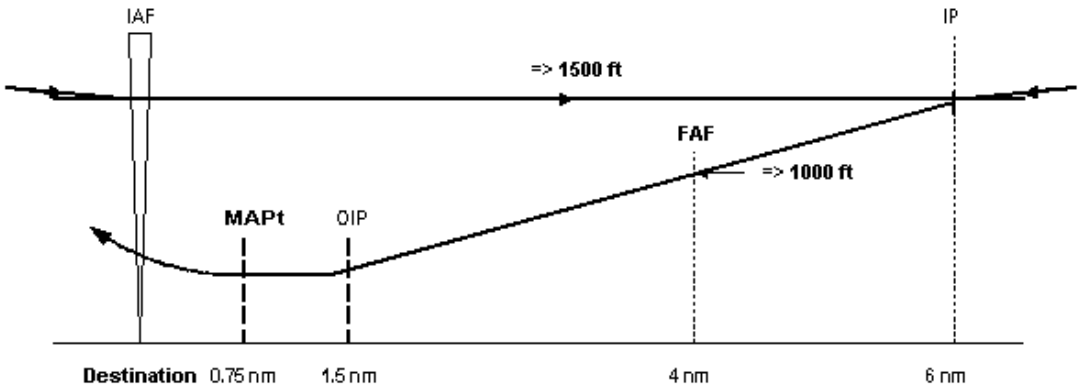


Figure 4 - Holding Pattern & Race Track Procedure

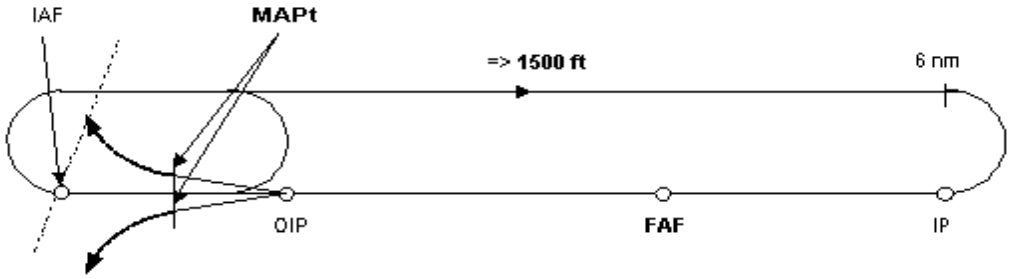
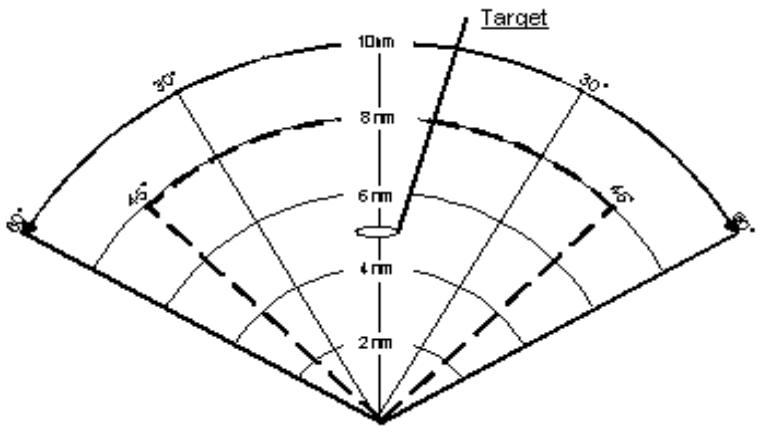


Figure 5 - Missed Approach Area Left & Right



AC OPS 3.465
Minimum Visibility for VFR Operations
See OPS 3.465

When flight with a visibility of less than 5 km is permitted, the forward visibility should not be less than the distance travelled by the helicopter in 30 seconds so as to allow adequate opportunity to see and avoid obstacles (see table below).

Visibility (m)	Advisory speed (kts)
800	50
1 500	100
2 000	120

AC/AMC F

PERFORMANCE GENERAL

AC OPS 3.475(c)(3)(ii)
Head-wind Component for Take-off and the Take-off Flight Path
See OPS 3.475(c)(3)(ii)

When considering approving the use of reported wind components in excess of 50% for take-off and the take-off flight path the following should be considered:

1 The proximity to the FATO, and accuracy enhancements, of the wind measuring equipment; and

2 The existence of appropriate procedures in a supplement to the Flight Manual; and

3 The establishment of a safety case.

AC OPS 3.480(a)(1) and (a)(2)
Category A and Category B
See OPS 3.480(a)(1) and (a)(2)

See OPS 3.485

See OPS 3.515(a)

See OPS 3.540(a)(1)

1 Helicopters which have been certificated according to any of the following standards are considered to satisfy the Category A criteria of OPS 3.480(a)(1). Provided that they have the necessary performance information scheduled in the Flight Manual, such helicopters are therefore eligible for Performance Class 1 or 2 operations:

a. Certification as Category A under CS-27 or CS-29;

b. Certification as Category A under FAR Part 29;

c. Certification as Group A under BCAR Section G;

d. Certification as Group A under BCAR- 29;

2 In addition to the above, certain helicopters have been certificated under FAR Part 27 and with compliance with FAR Part 29 engine isolation requirements as specified in FAA Advisory Circular AC 27-1. These helicopters may be accepted as eligible for Performance Class 1 or 2 operations provided that compliance is established with the following additional requirements of CS-29:

CS 29.1027(a)	Independence of engine and rotor drive system lubrication.
CS 29.1187(e)	
CS 29.1195(a) & (b)	Provision of a one-shot fire extinguishing system for each engine.
CS 29.1197	
CS 29.1199	
CS 29.1201	
CS 29.1323(c)(1)	Ability of the airspeed indicator to consistently identify the take-off decision point.

Note: The requirement to fit a fire extinguishing system may be waived if the helicopters manufacturer can demonstrate equivalent safety, based on service experience for the entire fleet showing that the actual incidence of fires in the engine fire zones has been negligible.

3 The OPS 3 performance operating rules of Subparts G, H and I were drafted in conjunction with the performance requirements of CS-29 and FAR Part 29 at Amendment 29-39. For helicopters certificated under FAR Part 29 at an earlier amendment, or under BCAR Section G or BCAR- 29, performance data will have been scheduled in the Helicopter Flight Manual according to these earlier requirements. This earlier scheduled data may not be fully compatible with the OPS 3 rules. Before Performance Class 1

or 2 operations are approved, it should be established that scheduled performance data is available which is compatible with the requirements of Subparts G or H respectively.

4 Any properly certificated and appropriately equipped helicopter is considered to satisfy the Category B criteria of OPS 3.480(a)(2). Such helicopters are therefore eligible for Performance Class 3 operations.

AMC OPS 3.480(a)(13)
Terminology - Hostile Environment
See OPS 3.480(a)(13)

Those open sea areas considered to constitute a hostile environment are designated by the Authority in the appropriate Aeronautical Information Publication or other suitable documentation.

AC OPS 3.480(a)(31)
The Application of TODRH
See OPS 3.480(a)(32)

1. DISCUSSION

Original definitions for helicopter performance were derived from aeroplanes; hence the definition of take-off distance owes much to operations from runways. Helicopters on the other hand can operate from runways, confined and restricted areas and rooftop heliports - all bounded by obstacles. As an analogy this is equivalent to a take-off from a runway with obstacles on and surrounding it.

It can therefore be seen that unless the original definitions from aeroplanes are tailored for helicopters, the flexibility of the helicopter might be constrained by the language of operational performance.

This paper concentrates on the critical term - Take-off Distance Required (TODRH) - and describes the methods to achieve compliance with it and, in particular, the alternative procedure described in ICAO Annex 6 Attachment A 4.1.1.2(b):

The take-off distance required does not exceed the take-off distance available; or

As an alternative, the take-off distance required may be disregarded provided that the helicopter with the critical power-unit failure at the TDP can, when continuing the take-off, clear all obstacles between the end of the take-off distance available and the point at which it becomes established in a climb at VTOSS by a vertical margin of 10.7 m (35 ft) or more. An obstacle is considered to be in the path of the helicopter if its distance from the nearest point on the surface below the intended line of flight does not exceed 30 m or 1.5 times the maximum dimension of the helicopter, whichever is greater.

2. DEFINITION OF TODRH

The definition of TODRH from OPS 3.480(a)(32) is as follows:

(32) Take-off distance required (TODRH). The horizontal distance required from the start of the take-off to the point at which VTOSS, a selected height, and a positive climb gradient are achieved, following failure of the critical power-unit being recognised at TDP, the remaining power-unit(s) operating within approved operating limits. The selected height is to be determined with the use of Helicopter Flight Manual data, and is to be at least 10.7 m (35 ft) above:

(i) the take-off surface; or

(ii) as an alternative, a level defined by the highest obstacle in the take-off distance required.

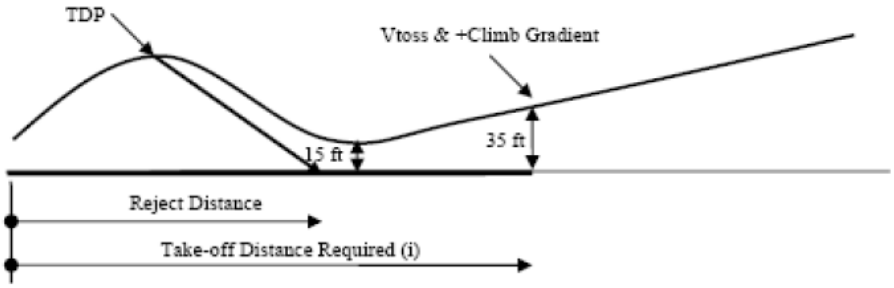
The original definition of TODRH was based only on the first part of this definition.

3. THE CLEAR AREA PROCEDURE (RUNWAY)

In the past, helicopters certificated in Category A would have had, at the least, a ‘clear area’ procedure. This procedure is analogous to an aeroplane Category A procedure and assumes a runway (either metalled or grass) with a smooth surface suitable for an aeroplane take-off (see Figure 1).

The helicopter is assumed to accelerate down the FATO (runway) outside of the HV diagram. If the helicopter has an engine failure before TDP, it must be able to land back on the FATO (runway) without damage to helicopter or passengers; if there is a failure at or after TDP the aircraft is permitted to lose height - providing it does not descend below a specified height above the surface (usually 15 ft if the TDP is above 15 ft). Errors by the pilot are taken into consideration but the smooth surface of the FATO limits serious damage if the error margin is eroded (e.g. by a change of wind conditions).

Figure 1 - Clear Area take-off



The operator only has to establish that the distances required are within the distance available (take-off distance and reject distance). The original definition of TODRH meets this case exactly.

From the end of the TODRH obstacle clearance is given by the climb gradient of the first or second climb segment meeting the requirement of OPS 3.495 (or for PC2 - OPS 3.525). The clearance margin from obstacles in the take-off flight path takes account of the distance travelled from the end of the take-off distance required and operational conditions (IMC or VMC).

4. CATEGORY A PROCEDURES OTHER THAN CLEAR AREA

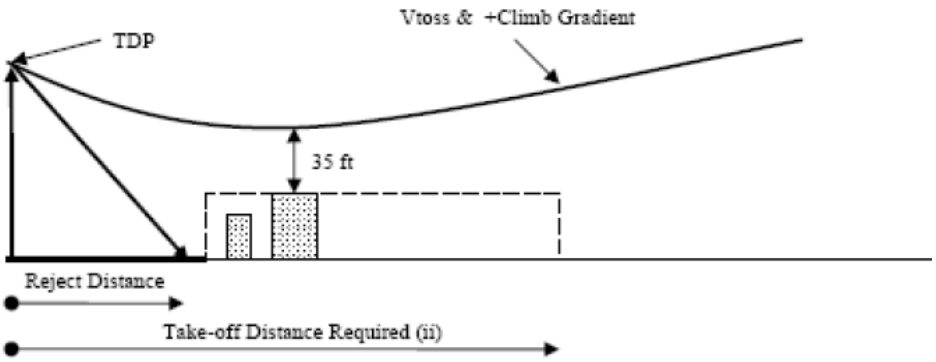
Procedures other than the clear area are treated somewhat differently. However, the short field procedure is somewhat of a hybrid as either part of the definition of TODRH can be utilised (the term 'helipad' is used in the following section to illustrate the principle only - it is not intended as a replacement for 'heliport').

4.1 Limited area, restricted area and helipad procedures (other than elevated)

The exact names of the procedure used for other than clear area are as many as there are manufacturers. However, principles for obstacle clearance are generic and the name is unimportant.

These procedures (see Figure 2 and Figure 3) are usually associated with an obstacle in the continued take-off area - usually shown as a line of trees or some other natural obstacle. As clearance above such obstacles is not readily associated with an accelerative procedure, as described in 3 above, a procedure using a vertical climb (or a steep climb in the forward, sideways or rearward direction) is utilised.

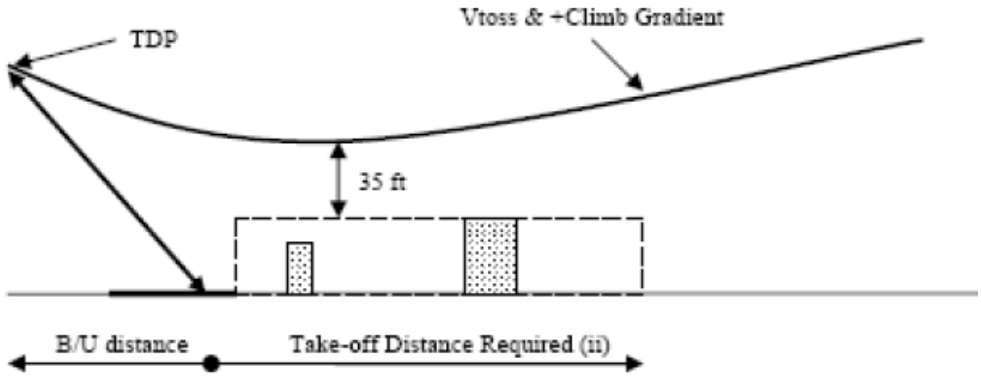
Figure 2 - Short Field take-off



With the added complication of a TDP principally defined by height together with obstacles in the continued take off area, a drop down to within 15 ft of the take-off surface is not deemed appropriate and the required obstacle clearance is set to 35 ft (usually called min-dip). The distance to the obstacle does

not need to be calculated (provided it is outside the rejected distance required), as clearance above all obstacles is provided by ensuring that helicopter does not descend below the min-dip associated with a level defined by the highest obstacle in the continued take-off area.

Figure 3 - Helipad take-off



These procedures depend upon the alternative definition of TODRH.

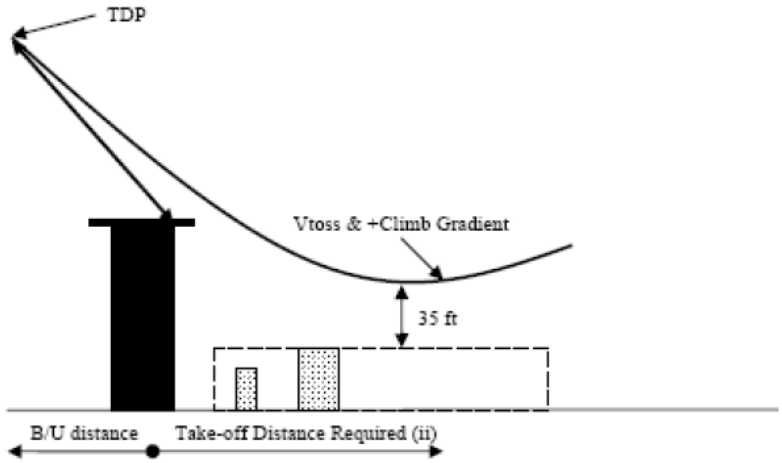
As shown in Figure 3, the point at which Vtoss and a positive rate of climb are met defines the TODRH. Obstacle clearance from that point is assured by meeting the requirement of OPS 3.495 (or for PC2 -OPS 3.525).

Also shown in Figure 3 is the distance behind the helipad which is the back-up distance (B/U distance).

4.2 Elevated helipad procedures

The elevated helipad procedure (see Figure 4) is a special case of the ground level helipad procedure discussed above.

Figure 4 - Elevate Helipad take-off



The main difference is that drop down below the level of the take-off surface is permitted. In the drop down phase, the Category A procedure ensures deck-edge clearance but, once clear of the deck-edge, the 35 ft clearance from obstacles relies upon the calculation of drop down. The alternative definition of the TODRH is applied.

Note: 35ft may be inadequate at particular elevated heliports which are subject to adverse airflow effects, turbulence, etc.

AC/AMC G

PERFORMANCE CLASS 1

AC OPS 3.490(d)
Obstacle Clearance in the Back-up Area
(See OPS 3.490(d))

The requirement in OPS 3.490(d) has been established in order to take into account the following factors:

In the back-up; the pilot has few visual cues and has to rely upon the altimeter and sight picture through the front window (if flight path guidance is not provided) to achieve an accurate rearward flight path.

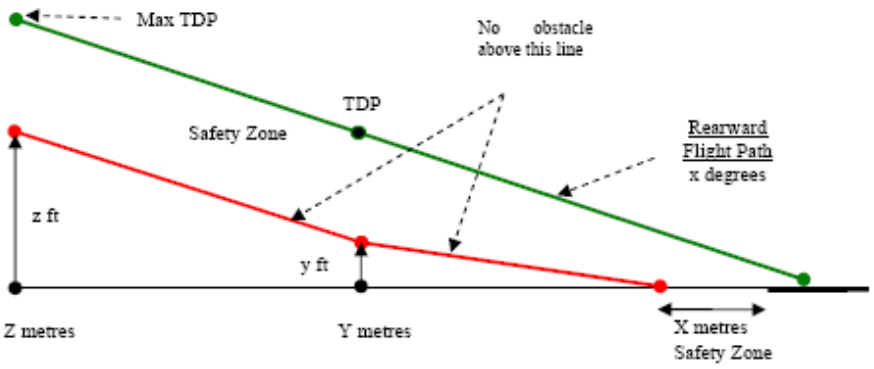
In the rejected take-off; the pilot has to be able to manage the descent against a varying forward speed whilst still ensuring an adequate clearance from obstacles until the helicopter gets in close proximity for landing on the FATO.

In the continued take-off; the pilot has to be able to accelerate to Vtoss whilst ensuring an adequate clearance from obstacles. The requirements of OPS 3.490(d) may be achieved by establishing that, in the backup area:

- no obstacles are located within the safety zone below the rearward flight path when described in the helicopter flight manual (see figure 1); (in the absence of such data in the helicopter flight manual, the operator should contact the manufacturer in order to define a safety zone);or

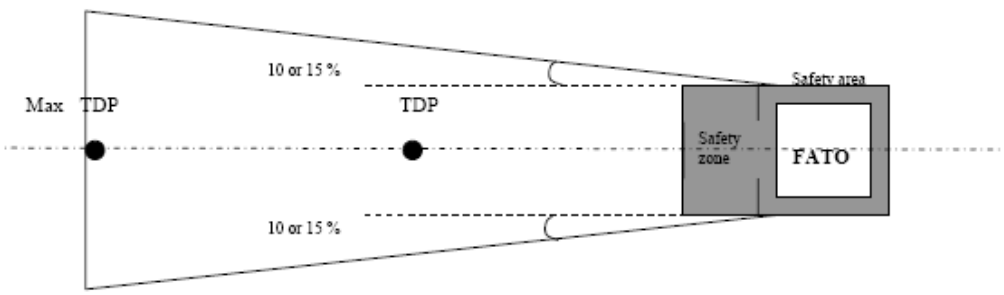
- during the backup, the rejected take-off and the continued take-off manoeuvres, obstacle clearance has been demonstrated by a means acceptable to the authority.

Figure 1 – rearward flight path



An obstacle, in the backup area, is considered if its lateral distance from the nearest point on the surface below the intended flight path is not further than half of the minimum FATO (or the equivalent term used in the Flight Manual) width defined in the Helicopter Flight Manual (or, when no width is defined 0.75 D), plus 0.25 times D (or 3m, whichever is greater); plus 0.10 for VFR day, or 0.15 for VFR night, of the distance travelled from the back of the FATO. (see figure 2).

Figure 2 – Obstacle accountability



AC OPS 3.490 & 3.510
Application for alternative take-off and landing procedures

Discussion

A manufacturer's Category A procedure defines profiles and scheduled data for take-off, climb, performance at minimum operating speed and landing, under specific environmental conditions and masses.

Associated with these profiles and conditions are minimum operating surfaces, take-off distances, climb performance and landing distances; these are provided (usually in graphic form) with the take-off and landing masses and the Take-off Decision Point (TDP) and Landing Decision Point (LDP).

The landing surface and the height of the TDP are directly related to the ability of the helicopter – following a power-unit failure before or at TDP - to reject onto the surface under forced landing conditions. The main considerations in establishing the minimum size of the landing surface are the scatter during flight testing of the reject manoeuvre, with the remaining engine operating within approved limits, and the required usable cue environment.

Hence an elevated site with few visual cues - apart from the surface itself - would require a greater surface area in order that the helicopter can be accurately positioned during the reject manoeuvre within the specified area. This usually results in the stipulation of a larger surface for an elevated site than for a ground level site (where lateral cues may be present).

This could have the unfortunate side-effect that a heliport which is built 3m above the surface (and therefore elevated by definition) might be out of operational scope for some helicopters - even though there might be a rich visual cue environment where rejects are not problematical. The presence of elevated sites where ground level surface requirements might be more appropriate could be brought to the attention of the Authority.

It can be seen that the size of the surface is directly related to the requirement of the helicopter to complete a rejected take-off following a power-unit failure. If the helicopter has sufficient power such that a failure before or at TDP will not lead to a requirement for rejected take-off, the need for large surfaces is removed; sufficient power for the purpose of this AC is considered to be the power required for hover out-of-ground-effect (HOGE) one-engine-inoperative (OEI).

Following a power-unit failure at or after the TDP, the continued take-off path provides OEI clearance from the take-off surface and the distance to reach a point from where climb performance in the first, and subsequent segments, is assured.

If HOGE OEI performance exists at the height of the TDP, it follows that the continued take-off profile, which has been defined for a helicopter with a mass such that a rejected take-off would be required following a power-unit failure at or before TDP, would provide the same, or better, obstacle clearance and the same, or less, distance to reach a point where climb performance in the first, and subsequent segments, is assured.

If the TDP is shifted upwards, provided that the HOGE OEI performance is established at the revised TDP, it will not affect the shape of the continued take-off profile but should shift the min-dip upwards by the same amount that the revised TDP has been increased - with respect to the basic TDP.

Such assertions are concerned only with the vertical or the back-up procedures and can be regarded as achievable under the following circumstances:

1 When the procedure is flown, it is based upon a profile contained in the Helicopter Flight Manual (HFM) - with the exception of the necessity to perform a rejected take-off.

2 The HOGE OEI performance is specified as in AC 29-2C, MG 12 for the Human External Cargo (HEC) Class D requirements.

3 The TDP, if shifted upwards (or upwards and backward in the back-up procedure) will be the height at which the HOGE OEI performance is established.

4 If obstacles are permitted in the back-up area they should continue to be permitted with a revised TDP.

Methods of Application:

The operator may apply to the Authority for a reduction in the size of the take-off surface under the following conditions:

Compliance with the requirements of OPS 3.490, 3.495 and 3.510 can be assured with:

1 a procedure based upon an appropriate Category A take-off and landing profile scheduled in the HFM;

2 a take-off or landing mass not exceeding the mass scheduled in the HFM for a HOGE OEI in compliance with HEC Class D performance requirements ensuring that:

2.1 following a power-unit failure at or before TDP, there are adequate external references to ensure that the helicopter can be landed in a controlled manner; and

2.2 following a power-unit failure at or after the LDP there are adequate external references to ensure that the helicopter can be landed in a controlled manner.

The operator may apply to the Authority for an upwards shift of the TDP and LDP under the following conditions:

Compliance with the requirements of OPS 3.490, 3.495 and 3.510 can be assured with:

3 a procedure based upon an appropriate Category A take-off and landing profile scheduled in the HFM;

4 a take-off or landing mass not exceeding the mass scheduled in the HFM for a HOGE OEI in compliance with HEC Class D performance requirements ensuring that:

4.1 following a power-unit failure at or after TDP compliance with the obstacle clearance requirements of OPS 3.490(a)(2)(iv) and OPS 3.495 can be met; and

4.2 following a power-unit failure at or before the LDP the balked landing obstacle clearance requirements of OPS 3.510(a)(2) and OPS 3.495 can be met.

Alternatively, the operator may apply to the Authority for the use of the Category A ground level surface requirement for a specific elevated heliport when it can be demonstrated that the usable cue environment at that heliport would permit such a reduction.

AC OPS 3.500(b)(3)
En-route - Critical Power Unit Inoperative (Fuel Jettison)
See OPS 3.500(b)(3).

The presence of obstacles along the en-route flight path may preclude compliance with OPS 3.500(a)(1) at the planned mass at the critical point along the route. In this case fuel jettison at the most critical point may be planned, provided that the procedures in AMC OPS 3.255 paragraph 3 are complied with.

AC/AMC H

PERFORMANCE CLASS 2

AC to Subpart H
Operations in Performance Class 2
See Subpart H

1. INTRODUCTION

This paper describes Performance Class 2 as established in OPS 3, Subpart H. It has been produced for the purpose of:

a. discussing the underlying philosophy of Operations in Performance Class 2;

b. showing simple methods of compliance; and

c. explaining how to determine - with examples and diagrams:

- the take-off and landing masses;
- the length of the safe-forced-landing area;
- distances to establish obstacle clearance; and
- entry point(s) into Performance Class 1.

It discusses the derivation of Performance Class 2 from ICAO Annex 6 Part III and describes an alleviation which may be approved following a Risk Assessment.

It reproduces relevant definitions; examines the basic requirements; discusses the limits of operation; and considers the benefits of the use of Performance Class 2.

It contains examples of Performance Class 2 in specific circumstances, and explains how these examples may be generalised to provide the operators with methods of calculating landing distances and obstacle clearance.

2. DEFINITIONS

To assist in the reading of this paper, definitions from OPS 3, Subpart F have been reproduced:

Distance DR. DR is the horizontal distance that the helicopter has travelled from the end of the take-off distance available.

Defined point after take-off (DPATO). The point, within the take-off and initial climb phase, before which the helicopter’s ability to continue the flight safely, with the critical power unit inoperative, is not assured and a forced landing may be required.

Defined point before landing (DPBL). The point within the approach and landing phase, after which the helicopter’s ability to continue the flight safely, with the critical power unit inoperative, is not assured and a forced landing may be required.

Landing distance available (LDAH). The length of the final approach and take-off area plus any additional area declared available and suitable for helicopters to complete the landing manoeuvre from a defined height.

Landing distance required (LDRH). The horizontal distance required to land and come to a full stop from a point 15m (50ft) above the landing surface.

Performance Class 2. Performance Class 2 operations are those operations such that, in the event of critical power unit failure, performance is available to enable the helicopter to safely continue the flight, except when the failure occurs early during the take-off manoeuvre or late in the landing manoeuvre, in which cases a forced landing may be required.

Safe forced landing. Unavoidable landing or ditching with a reasonable expectancy of no injuries to persons in the aircraft or on the surface.

Take-off distance available. The length of the final approach and take-off area plus the length of any clearway (if provided) declared available and suitable for helicopters to complete the take-off.

The following terms, which are not defined in OPS 3 Subpart F, are used in the following text:

V_T. A target speed at which to aim at the point of minimum ground clearance (min-dip) during acceleration from TDP to Vtoss.

V_{50}. A target speed and height utilised to establish a Flight Manual distance (in compliance with the requirement of CS 29.63) from which climb out is possible.

$V_{stay\text{-}up}$. A colloquial term used to indicate a speed at which a descent would not result following a power unit failure. This speed is several knots lower than Vtoss at the equivalent take-off mass.

3. WHAT DEFINES PERFORMANCE CLASS 2

Performance Class 2 can be considered as Performance Class 3 take-off or landing, and Performance Class 1 climb, cruise and descent. It comprises an All Engines Operating (AEO) obstacle clearance regime for the take-off or landing phases, and a One Engine Inoperative (OEI) obstacle clearance regime for the climb, cruise, descent, approach and missed approach phases.

Note: For the purpose of performance calculations in OPS 3, the CS 29.67 Category A climb performance criteria is used:

- 150 ft/min at 1,000 ft (at Vy);

and depending on the choice of DPATO:

- 100 ft/min up to 200 ft (at Vtoss)

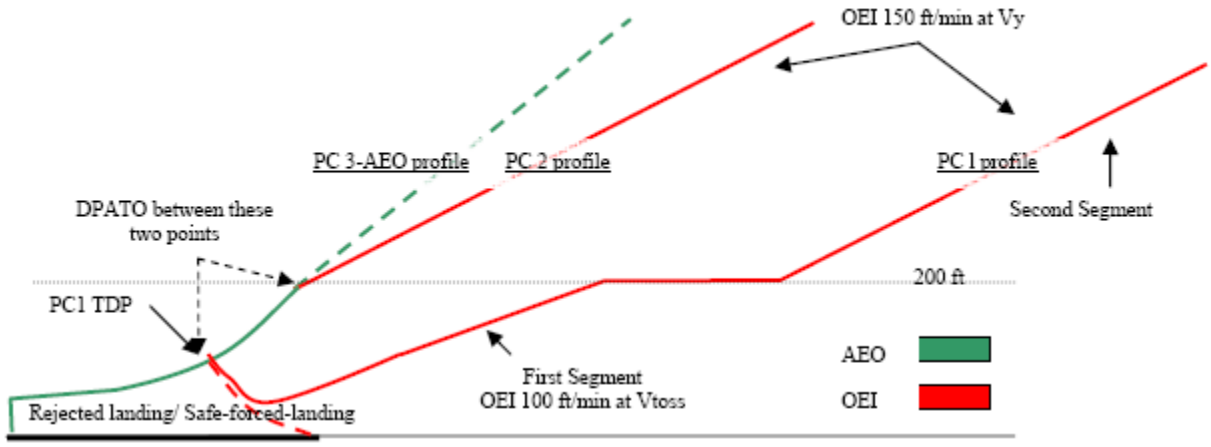
at the appropriate power settings.

3.1 Comparison of obstacle clearance in all Performance Classes

Figure 2 shows the profiles of the three Performance Classes - superimposed on one diagram.

Performance Class 1 (PC 1); from TDP, requires OEI obstacle clearance in all phases of flight; the construction of Category A procedures, provides for a flight path to the first climb segment, a level acceleration segment to Vy, which may be shown concurrent with the first segment), followed by the second climb segment from Vy at 200 ft (see Figure 1).

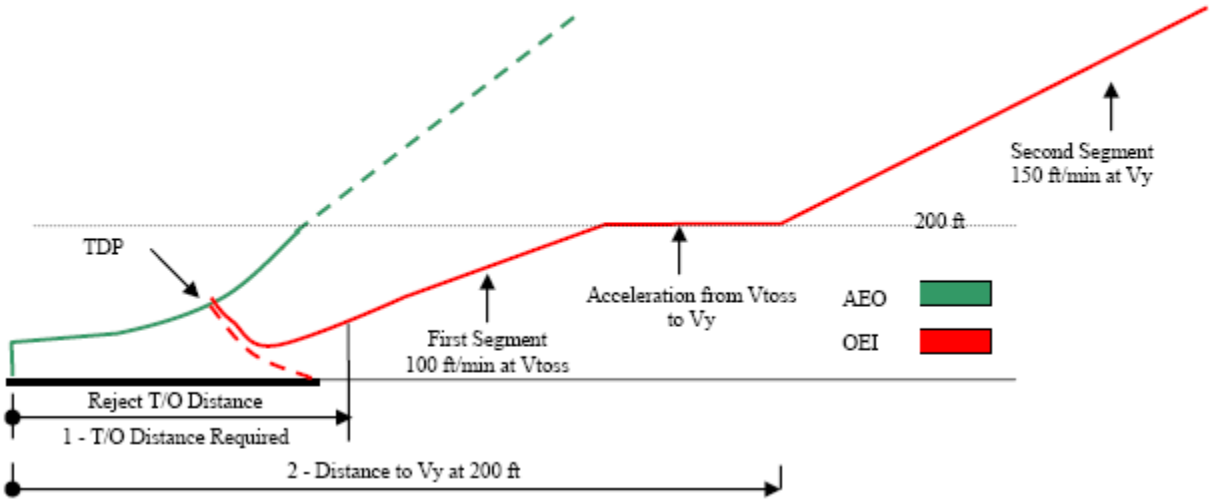
Figure 1 - All Performance Classes (a comparison)



- Performance Class 2 (PC 2); requires AEO obstacle clearance to DPATO and OEI from then on. The take-off mass has the PC 1 second segment climb performance at its basis therefore, at the point where Vy at 200 ft is reached, Performance Class 1 is achieved (see also Figure 3).

- Performance Class 3 (PC 3); requires AEO obstacle clearance in all phases.

Figure 2 - Performance Class 1 distances



3.2 Comparison of the discontinued take-off in all Performance Classes

- PC 1 - requires a prepared surface on which a rejected landing can be undertaken (no damage); and

- PC 2 and 3 - require a safe-forced-landing surface (some damage can be tolerated but there must be a reasonable expectancy of no injuries to persons in the aircraft or third parties on the surface).

4. THE DERIVATION OF PERFORMANCE CLASS 2

Subpart H - PC 2 is primarily based on the text of ICAO Annex 6 Part III Section II and its attachments which provide for the following:

a. Obstacle clearance before DPATO; the helicopter shall be able, with all engines operating, to clear all obstacles by an adequate margin until it is in a position to comply with b. below.

b. Obstacle clearance after DPATO; the helicopter shall be able, in the event of the critical power unit becoming inoperative at any time after reaching DPATO, to continue the take-off clearing all obstacles along the flight path by an adequate margin until it is able to comply with en-route clearances.

c. Engine failure before DPATO; before the DPATO, failure of the critical power-unit may cause the helicopter to force land; therefore a safe-forced-landing should be possible (this is analogous to the requirement for a reject in Performance Class 1 but where some damage to the helicopter can be tolerated.)

5. BENEFITS OF OPS 3 PERFORMANCE CLASS 2

Operations in Performance Class 2 permit advantage to be taken of an all-engines-operating (AEO) procedure for a short period during take-off and landing - whilst retaining engine failure accountability in the climb, descent and cruise. The benefits include:

- Ability to use (the reduced) distances scheduled for the AEO - thus permitting operations to take place at smaller heliports and allowing airspace requirements to be reduced.

- Ability to operate when the safe-forced-landing distance available is located outside the boundary of the heliport.

- Ability to operate when the take-off-distance required is located outside the boundary of the heliport.

- Ability to use existing Category A profiles and distances when the surface conditions are not adequate for a reject but are suitable for a safe-forced-landing (for example when the ground is waterlogged).

Additionally, following a Risk Assessment when the use of exposure is permitted by the Authority:

- Ability to operate when a safe-forced landing is not assured in the take-off phase.

- Ability to penetrate the HV curve for short periods during take-off or landing.

6 IMPLEMENTATION OF PERFORMANCE CLASS 2 IN OPS 3

The following sections discuss the principles of the implementation of Performance Class 2.

6.1 Does ICAO spell it all out?

ICAO Annex 6 does not give guidance on how DPATO should be calculated nor does it require that distances be established for the take-off. However, it does require that, up to DPATO AEO, and from DPATO OEI, obstacle clearance is established (see Figure 3 and Figure 4 which are simplified versions of the diagrams contained in Annex 6 Part III, Attachment A).

Note: Annex 8 – Airworthiness of Aircraft (Part IV, Chapter 2.2.1.3.4) requires that an AEO distance be scheduled for all helicopters operating in Performance Classes 2 & 3. Annex 6 is dependent upon the scheduling of the AEO distances, required in Annex 8, to provide data for the location of DPATO.

When showing obstacle clearance, the divergent obstacle clearance height required for IFR is as in Performance Class 1 - achieved by the application of the additional obstacle clearance of 0.01 DR (DR = the distance from the end of 'take-off-distance-available' - see the pictorial representation in Figure 4 and the definition in section 2. above).

As can also be seen from Figure 4, flight must be conducted in VFR until DPATO has been achieved (and deduced that if an engine failure occurs before DPATO, entry into IFR is not permitted (as the OEI climb gradient will not have been established)).

Figure 3 - Performance Class 2 Obstacle Clearance

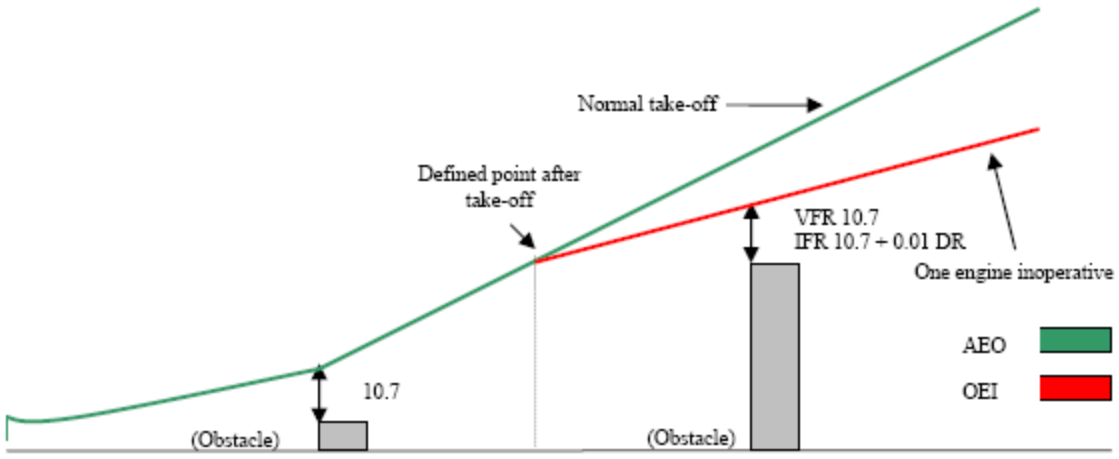
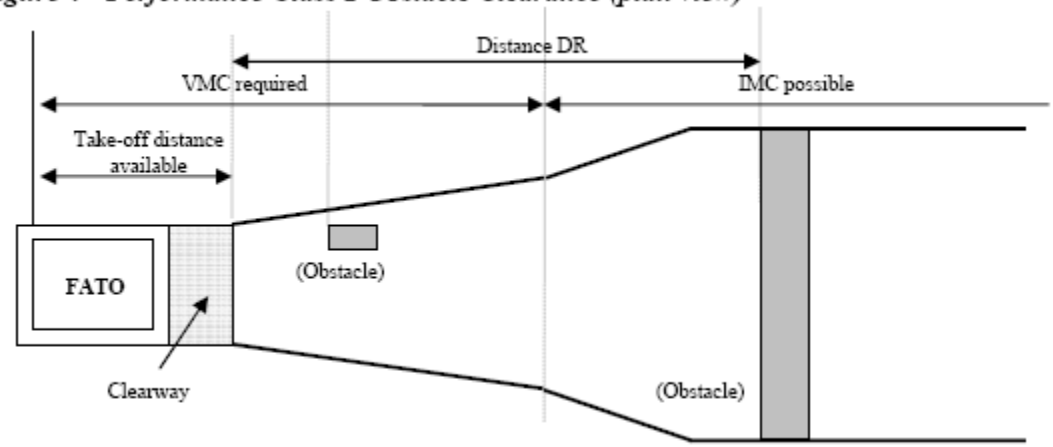


Figure 4 - Performance Class 2 Obstacle Clearance (plan view)



6.2 Function of DPATO

From the preceding paragraphs it can be seen that DPATO is germane to PC 2. It can also be seen that, in view of the many aspects of DPATO, it has, potentially, to satisfy a number of requirements which are not necessarily synchronised (nor need to be).

It is clear that it is only possible to establish a single point for DPATO, satisfying the requirement of 4 b & 4 c above, when:

- accepting the TDP of a Category A procedure; or

- extending the safe-forced-landing requirement beyond required distances (if data is available to permit the calculation of the distance for a safe-forced-landing from the DPATO).

It could be argued that the essential requirement for DPATO is contained in section 4 b - OEI obstacle clearance. From careful examination of the flight path reproduced in Figure 3 above, it may be reasonably deduced that DPATO is the point at which adequate climb performance is established (examination of Category A procedures would indicate that this could be (in terms of mass, speed and height above the take-off surface) the conditions at the start of the first or second segments - or any point between.)

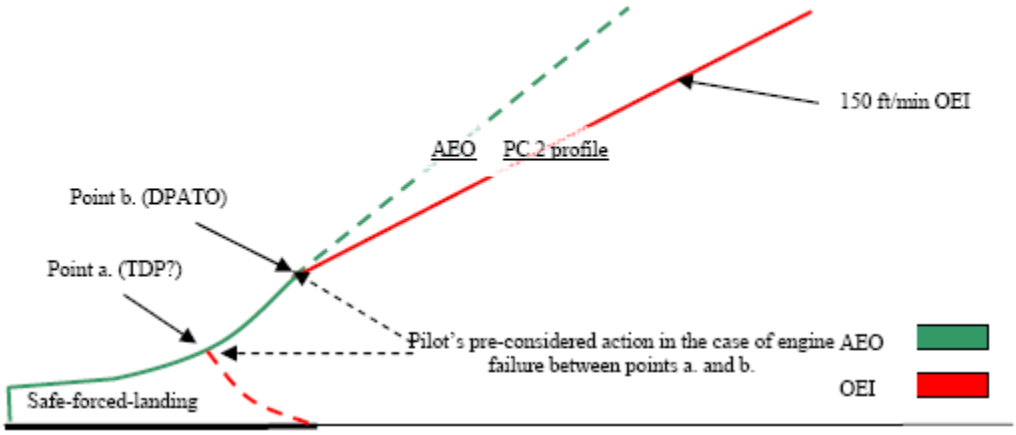
Note: The diagrams in Attachment A of ICAO Annex 6, do not appear to take account of drop down permitted under Category A procedures; similarly with helideck departures, the potential for acceleration in drop down below deck level (once the deck edge has been cleared) is also not shown. These omissions could be regarded as a simplification of the diagram, as drop down is discussed and accepted in the accompanying ICAO text.

It may reasonably be argued that, during the take-off and before reaching an appropriate climb speed (Vtoss or Vy), Vstayup will already have been achieved (where Vstayup is the ability to continue the flight and accelerate without descent shown in some Category A procedures as VT or target speed) and where, in the event of an engine failure, no landing would be required.

It is postulated that, to practically satisfy all the requirements of sections 4 a, b and c above, we do not need to define DPATO at one synchronised point; we can meet requirements separately - i.e. defining the distance for a safe-forced-landing, and then establishing the OEI obstacle clearance flight path.

As the point at which the helicopter's ability to continue the flight safely, with the critical power unit inoperative is the critical element, it is that for which DPATO is used in this text.

Figure 5 - The three elements in a PC 2 take-off



6.2.1 The three elements from the pilot's perspective

When seen from the pilot's perspective (see Figure 5), there are three elements of the PC 2 take-off - each with associated related actions which need to be considered in the case of an engine failure:

a. action in the event of an engine failure - up to the point where a forced-landing will be required.

b. action in the event of an engine failure - from the point where OEI obstacle clearance is established (DPATO).

c. pre-considered action in the event of an engine failure - in the period between a. and b.

The action of the pilot in a. and b. is deterministic i.e. it remains the same for every occasion. For pre-consideration of the action at point c.; as is likely that the planned flight path will have to be abandoned (the point at which obstacle clearance using the OEI climb gradients not yet being reached) the pilot must (before take-off) have considered his options and the associated risks, and have in mind the course of action that will be pursued in the event of an engine failure during that short period. (As it is likely that any action will involve turning manoeuvres, the effect of turns on performance must be considered.)

6.3 Take-off mass for Performance Class 2

As previously stated, Performance Class 2 is an AEO take-off which, from DPATO, has to meet the requirement for OEI obstacle clearance in the climb and en-route phases. Take-off mass is therefore the mass that gives at least the minimum climb performance of 150 ft/min at Vy, at 1000 ft above the take-off point, and obstacle clearance.

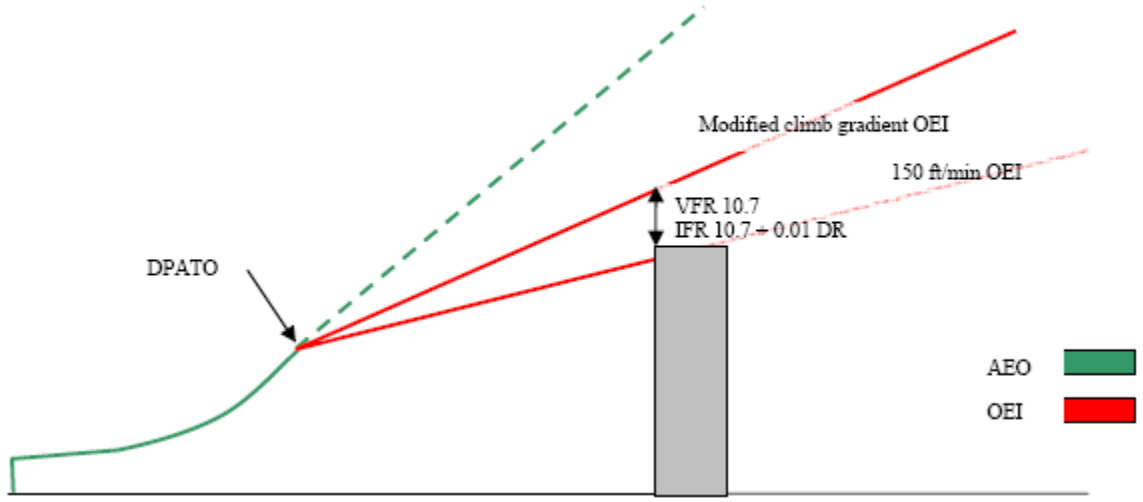
As can be seen in Figure 6 below, the take-off mass may have to be modified when it does not provide the required OEI clearance from obstacles in the take-off-flight path (exactly as in Performance Class 1). This could occur when taking off from a heliport where the flight path has to clear an obstacle such a ridge line (or line of buildings) which can neither be:

- flown around using VFR and see and avoid; nor

- cleared using the minimum climb gradient given by the take-off mass (150 ft/min at 1,000 ft)

In this case, the take-off mass has to be modified (using data contained in the HFM) to give an appropriate climb gradient.

Figure 6 - Performance Class 2 (enhanced climb gradient)



6.4 Do distances have to be calculated?

Distances do not have to be calculated if, by using pilot judgement or standard practice, it can be established that:

- A safe-forced-landing is possible following an engine failure (notwithstanding that there might be obstacles in the take-off path); and

- Obstacles can be cleared (or avoided) - AEO in the take-off phase and OEI in the climb.

If early entry (in the sense of cloud base) into IMC is expected - an IFR departure should be planned. However, standard masses and departures can be used when described in the Operations Manual.

6.5 The use of Category A data

In Category A procedures, TDP is the point at which either a rejected landing or a safe continuation of the flight, with OEI obstacle clearance, can be performed.

For PC 2 (when using Category A data), only the safe-forced-landing (reject) distance depends on the equivalent of the TDP; if an engine fails between TDP and DPATO the pilot has to decide what action is required - it is not necessary for a safe-forced-landing distance to be established from beyond the equivalent of TDP (see Figure 5 and discussion in section 6.2.1 above).

Category A procedures based on a fixed V_{toss} are usually optimised either for the reduction of the rejected take-off distance, or the take-off distance. Category A procedures based on a variable Vtoss allow either a reduction in required distances (low Vtoss) or an improvement in OEI climb capability (high Vtoss). These optimisations may be beneficial in PC 2 to satisfy the dimensions of the take-off site.

In view of the different requirements for PC 2 (from PC 1), it is perfectly acceptable for the two calculations (one to establish the safe-forced-landing distance and the other to establish DPATO) to be based upon different Category A procedures. However, if this method is used, the mass resulting from the calculation cannot be more than the mass from the more limiting of the procedures.

6.6 DPATO and obstacle clearance

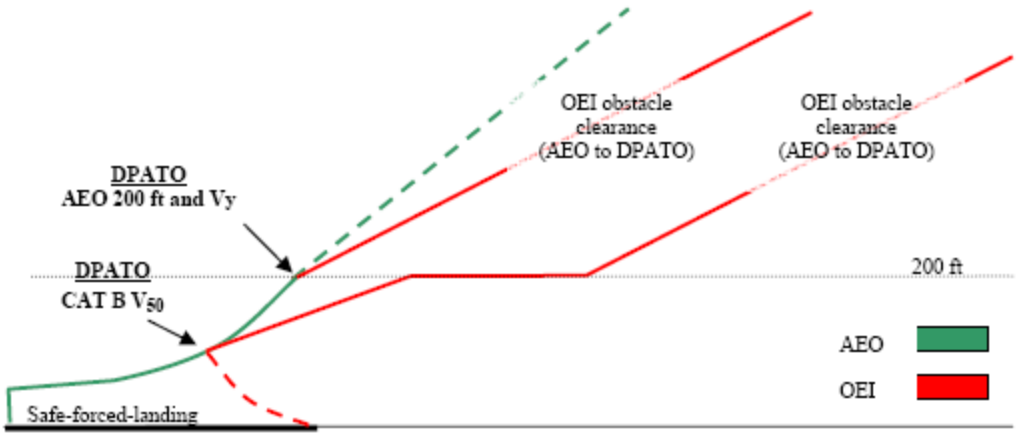
If it is necessary for OEI obstacle clearance to be established in the climb, the starting point (DPATO) for the (obstacle clearance) gradient has to be established. Once DPATO is defined, the OEI obstacle clearance is relatively easy to calculate with data from the HFM.

6.6.1 DPATO based on AEO distance

In the simplest case; if provided, the scheduled AEO to 200 ft at Vy can be used (see Figure 7).

In the simplest case; if provided, the scheduled AEO to 200 ft at Vy can be used (see

Figure 7 -Suggested AEO locations for DPATO

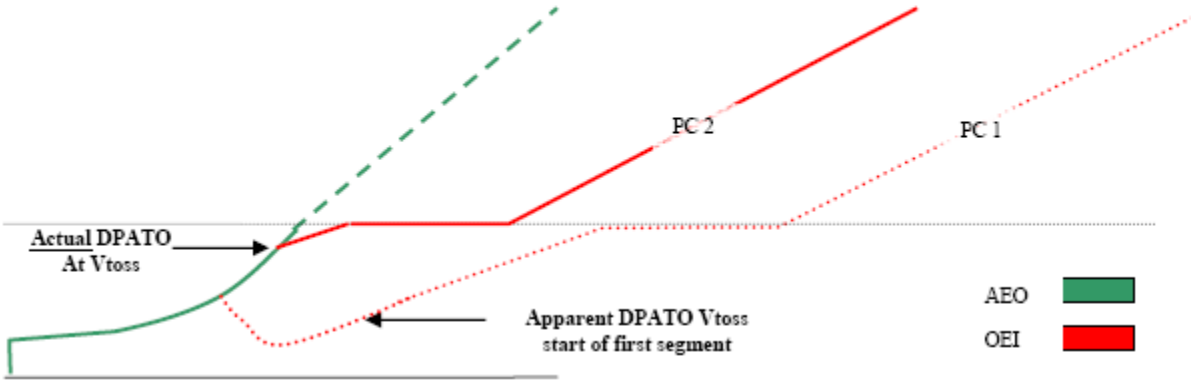


Otherwise, and if scheduled in the HFM, the AEO distance to 50ft (V_{50}) – determined in accordance with CS 29.63 - can be used (see Figure 7). Where this distance is used, it will be necessary to ensure that the V_{50} climb out speed is associated with a speed and mass for which OEI climb data is available so that, from V_{50}, the OEI flight path can be constructed.

6.6.2 DPATO based on Category A distances

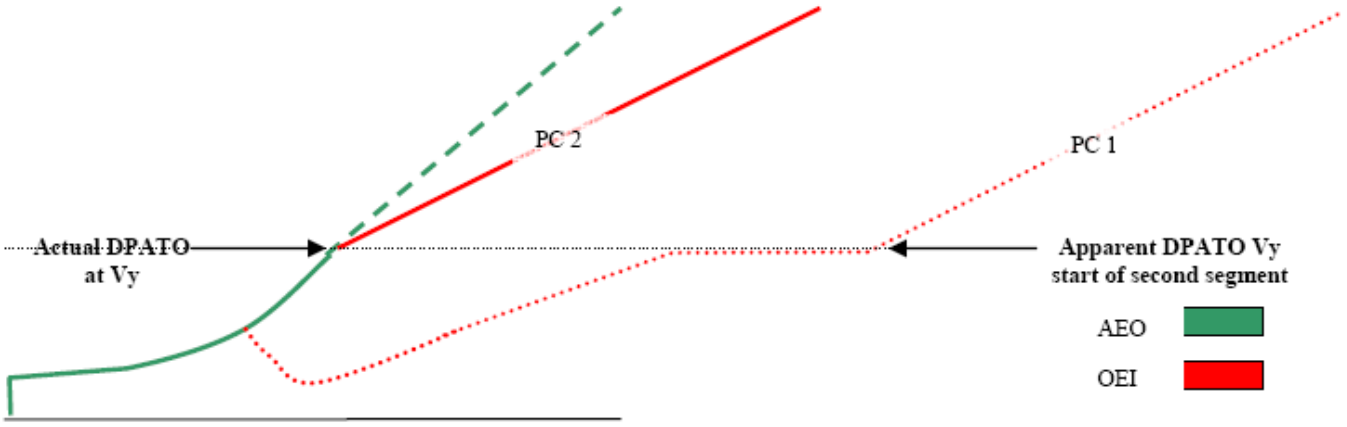
It is not necessary for specific AEO distances to be used (although for obvious reasons it is preferable); if they are not available, a flight path (with OEI obstacle clearance) can be established using Category A distances (see Figure 8 and Figure 9) - which will then be conservative.

Figure 8 - Using Cat A data; actual and apparent position of DPATO (Vtoss and start of first segment)



Note: the apparent DPATO is for planning purposes only in the case where AEO data is not available to construct the take-off flight path. The actual OEI flight path will provide better obstacle clearance than the apparent one (used to demonstrate the minimum requirement) - as seen from the firm and dashed lines in the above diagram.

Figure 9 - Using Cat A data; actual and apparent position of DPATO (Vy and start of second segment)



6.6.3 Use of most favourable Category A data

The use of AEO data is recommended for calculating DPATO. However, where an AEO distance is not provided in the flight manual, distance to Vy at 200 ft, from the most favourable of the Category A procedures, can be used to construct a flight path (provided it can be demonstrated that AEO distance to 200 ft at Vy is always closer to the take-off point than the CAT A OEI flight path).

In order to satisfy the requirement of OPS 3.525, the last point from where the start of OEI obstacle clearance can be shown is at 200 ft.

6.7 The calculation of DPATO - a summary

DPATO should be defined in terms of speed and height above the take-off surface and should be selected such that HFM data (or equivalent data) is available to establish the distance from the start of the take-off up to the DPATO (conservatively if necessary).

6.7.1 First method

DPATO is selected as the HFM Category B take-off distance (V50 speed or any other take-off distance scheduled in accordance with CS 29.63) provided that within the distance the helicopter can achieve:

- One of the Vtoss values (or the unique Vtoss value if is not variable) provided in the HFM, selected so as to assure a climb capability according to Cat A criteria; or

- Vy.

Compliance with OPS 3.525 would be shown from V50 (or the scheduled Category B take-off distance).

6.7.2 Second method

DPATO is selected as equivalent to the TDP of a Category A clear area take-off procedure conducted in the same conditions.

Compliance with OPS 3.525 would be shown from the point at which V_{toss}, a height of at least 35 ft above the take-off surface and a positive climb gradient are achieved (which is the Category A clear area take-off distance).

Safe-forced-landing areas should be available from the start of the take-off, to a distance equal to the Category A “clear area” rejected take-off distance.

6.7.3 Third method

As an alternative; DPATO could be selected such that Helicopter Flight Manual one engine inoperative (OEI) data is available to establish a flight path initiated with a climb at that speed. This speed should then be:

- One of the Vtoss values (or the unique Vtoss value if is not variable) provided in the Helicopter Flight Manual, selected so as to assure a climb capability according to Category A criteria; or

- Vy.

The height of the DPATO should be at least 35 ft and can be selected up to 200 ft. Compliance with OPS 3.525 would be shown from the selected height.

6.8 Safe-forced-landing distance

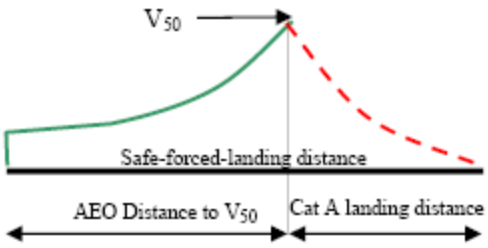
Except as provided in 6.7.2 above, the establishment of the safe-forced-landing distance could be problematical as is not likely that PC 2 specific data will be available in the HFM.

By definition, the Category A reject distance may be used when the surface is not suitable for a reject, but may be satisfactory for a safe-force-landing (for example where the surface is flooded or is covered with vegetation).

Any Category A (or other accepted) data may be used to establish the distance – however, once established it remains valid only if the Category A mass (or the mass from the accepted data) is used and the Category A (or accepted) AEO profile to the TDP is flown. In view of these constraints, the likeliest Category A procedures are the clear area or the short field (restricted area/site) procedures.

From Figure 10, it can be seen that if the Category B V_{50} procedure is used to establish DPATO, the combination of the distance to 50 ft and the Category A 'clear area' landing distance, required by CS 29.81 (the horizontal distance required to land and come to a complete stop from a point 50 ft above the landing surface), will give a good indication of the maximum safe-forced-landing distance required (see also the discussion on V_{stayup} above).

Figure 10 - Category B (V_{50}) safe-forced-landing distance



6.9 Performance Class 2 landing

For other than PC 2 operations to elevated heliport/helidecks (see the discussion in section 7.4.1 below), the principles for the landing case are much simpler. As the performance requirement for PC 1 and PC 2 landings are virtually identical, the condition of the landing surface is the main issue.

If the engine fails at any time during the approach, the helicopter must be able either: to perform a go-around meeting the requirements of OPS 3.525; or perform a safe-forced-landing on the surface. In view of this, and if using PC 1 data, the LDP should not be lower that the corresponding TDP (particularly in the case of a variable TDP).

The landing mass will be identical to the take-off mass for the same site (with consideration for any reduction due to obstacle clearance - as shown in Figure 6 above).

In the case of a balked landing (i.e. the landing site becomes blocked or unavailable during the approach); the full requirement for take-off obstacle clearance must be met.

7. OPERATIONS IN PERFORMANCE CLASS 2 WITH EXPOSURE

OPS 3 offers an opportunity to discount the requirement for an assured safe-forced-landing area in the take-off or landing phase - subject to an approval from the Authority. The following sections deals with this option:

7.1 Limit of Exposure

As stated above, Performance Class 2 has to ensure AEO obstacle clearance to DPATO and OEI obstacle clearance from that point. This does not change with the application of exposure.

It can therefore be stated that operations with exposure are concerned only with alleviation from the requirement for the provision of a safe-forced-landing.

The absolute limit of exposure is 200 ft - from which point OEI obstacle clearance must be shown.

7.2 The principle of Risk Assessment

ICAO Annex 6 Part III Chapter 3.1.2 states that:

- 3.1.2 Performance Class 3 helicopters shall only be operated in conditions of weather and light, and over such routes and diversions there from, that permit a safe-forced-landing to be executed in the event of engine failure. The conditions of this paragraph apply also to performance Class 2 helicopters prior to the defined point after take-off and after the defined point before landing.

  The ICAO Helicopter and Tilt-rotor Study Group, is engaged in an ongoing process to amend Chapter 3 to take account of current practices – following this process the proposed text is likely to be:

- 3.1.2 In conditions where the safe continuation of flight is not ensured in the event of a critical power unit failure, helicopter operations shall be conducted in a manner that gives appropriate consideration for achieving a safe-forced-landing.

Although a safe-forced-landing may no longer be the (absolute) Standard, it is considered that Risk Assessment is obligatory to satisfy the amended requirement for 'appropriate consideration'.

Risk Assessment used in OPS 3 for fulfilment of this proposed Standard is consistent with principles described in 'AS/NZS 4360:1999'.

Note: terms used in this text and defined in the AS/NZS Standard are shown in Sentence Case e.g. Risk Assessment or Risk Reduction.

7.3 The application of Risk Assessment to OPS 3 Performance Class 2

Under circumstances where no risk attributable to engine failure (beyond that inherent in the safe-forced landing) is present, operations in Performance Class 2 may be conducted in accordance with the non-alleviated requirements contained above - and a safe-forced-landing will be possible.

Under circumstances where such risk would be present i.e.: operations to an elevated heliport (deck edge strike); or, when permitted, operations from a site where a safe-forced-landing cannot be accomplished because the surface is inadequate; or where there is penetration into the HV curve for a short period during take-off or landing (a limitation in CS 29 HFMs), operations have to be conducted under a specific approval.

Provided such operations are Risk Assessed and can be conducted to an established safety target – they may be approved.

7.3.1 The elements of the Risk Management. The approval process consists of an operational Risk Assessment and the application of four principles: a safety target; a helicopter reliability assessment; continuing airworthiness; and mitigating procedures.

7.3.2 The safety target

The main element of the Risk Assessment when exposure was initially introduced was the assumption that turbine engines in helicopters would have failure rates of about 1:100 000 per flying hour; which would permit (against the agreed safety target of 5 x 10-8 per event) an exposure of about 9 seconds for twins during the take-off or landing event. (When choosing this target it was assumed that the majority of current well maintained turbine powered helicopters would be capable of meeting the event target - it therefore represents the Residual Risk)

Note: Residual Risk is considered to be the risk that remains when all mitigating procedures -airworthiness and operational - are applied (see sections 7.3.4 and 7.3.5 below).

7.3.3 The reliability assessment. The reliability assessment was initiated to test the hypothesis (stated in 7.3.2 above) that the majority of turbine powered types would be able to meet the safety target. This hypothesis could only be confirmed by an examination of the manufacturers' power-loss data.

7.3.4 Mitigating procedures (airworthiness)

Mitigating procedures consist of a number of elements: the fulfilment of all manufacturers' safety modifications; a comprehensive reporting system (both failures and usage data); and the implementation of a Usage Monitoring System (UMS). Each of these elements is to ensure that engines, once shown to be sufficiently reliable to meet the safety target, will sustain such reliability (or improve upon it).

The monitoring system is felt to be particularly important as it had already been demonstrated that when such systems are in place it inculcates a more considered approach to operations. In addition the elimination of 'hot starts', prevented by the UMS, itself minimises the incidents of turbine burst failures.

7.3.5 Mitigating procedures (operations)

Operational and training procedures, to mitigate the risk - or minimise the consequences - are required of the operator. Such procedures are intended to minimise risk by ensuring that: the helicopter is operated within the exposed region for the minimum time; and simple but effective procedures are followed to minimise the consequence should an engine failure occur.

7.4 Operation with Exposure - the alleviation and the requirement

When operating with exposure, there is alleviation from the requirement to establish a safe-forced-landing area (which extends to landing as well as take-off); however, the requirement for obstacle clearance AEO in the take-off and from DPATO OEI in the climb and en-route phases remains (both for take-off and landing).

The take-off mass is obtained from the more limiting of the following:

- the climb performance of 150 ft/min at 1000 ft above the take-off point; or
- obstacle clearance (in accordance with 6.3 above); or
- AEO hover out of ground effect (HOGE) performance at the appropriate power setting. (AEO HOGE is required to ensure acceleration when (near) vertical dynamic take-off techniques are being used. Additionally for elevated heliports/helidecks, it ensures a power reserve to offset ground cushion dissipation; and ensures that, during the landing manoeuvre, a stabilised HOGE is available - should it be required.)

7.4.1 Operations to elevated heliport/helidecks

PC 2 operations to elevated heliports and helidecks are a specific case of operations with exposure. In these operations, the alleviation covers the possibility of:

- a deck-edge strike if the engine fails early in the take-off or late in the landing; and
- penetration into the HV Curve during take-off and landing; and
- forced landing with obstacles on the surface (hostile water conditions) below the elevated heliport (helideck). The take-of mass is as stated above and relevant techniques are as described in AC OPS 3.520(a)(3) and 3.535(a)(3)

Note: It is unlikely that the DPATO will have to be calculated with operations to helidecks (due to the absence of obstacles in the take-off path).

7.4.2 Additional requirements for operations to Helidecks in a Hostile Environment

For a number of reasons (e.g. the deck size, and the helideck environment – including obstacles and wind vectors), it was not anticipated that operations in PC 1 would be technically feasible or economically justifiable by the projected EASA deadline of 2010 (OEI HOGE could have provided a method of compliance but this would have resulted in a severe and unwarranted restriction on payload/range).

However, due to the severe consequences of an engine failure to helicopters involved in take-off and landings to helidecks located in hostile sea areas (such as the North Sea or the North Atlantic), a policy of Risk Reduction is called for. As a result, enhanced Class 2 take-off and landing masses together with techniques that provide a high confidence of safety due to: deck-edge avoidance; and, drop-down that provides continued flight clear of the sea, are seen as practical measures.

For helicopters which have a Category A elevated helideck procedure, certification is satisfied by demonstrating a procedure and adjusted masses (adjusted for wind as well as temperature and pressure) which assure a 15ft deck edge clearance on take-off and landing. It is therefore recommended that manufacturers, when providing enhanced PC2 procedures, use the provision of this deck-edge clearance as their benchmark.

As the height of the helideck above the sea is a variable, drop down has to be calculated; once clear of the helideck, a helicopter operating in PC1 would be expected to meet the 35ft obstacle clearance. Under circumstances other than open sea areas and with less complex environmental conditions, this would not present difficulties. As the provision of drop down takes no account of operational circumstances, standard drop down graphs for enhanced PC2 similar to those in existence for Category A procedures are anticipated.

Under conditions of offshore operations, calculation of drop down is not a trivial matter the following examples indicate some of the problems which might be encountered in hostile environments:

- Occasions when tide is not taken into account and the sea is running irregularly - the level of the obstacle (i.e. - the sea) is indefinable making a true calculation of drop down impossible.

- Occasions when it would not be possible - for operational reasons - for the approach and departure paths to be clear of obstacles - the ‘standard’ calculation of drop-down could not be applied.

Under these circumstances, practicality indicates that drop-down should be based upon the height of the deck AMSL and the 35ft clearance should be applied.

There are however, other and more complex issues which will also affect the deck-edge clearance and drop down calculations:

- When operating to moving decks on vessels, a recommended landing or take-off profile might not be possible because the helicopter might have to hover alongside in order that the rise and fall of the ship is mentally mapped; or, on take-off re-landing in the case of an engine failure might not be an option.

Under these circumstances, the Commander might adjust the profiles to address a hazard more serious or more likely than that presented by an engine failure.

It is because of these and other (unforeseen) circumstances that a prescriptive requirement is not used. However, the target remains a 15ft deck-edge clearance and a 35ft obstacle clearance and data should be provided such that, where practically possible, these clearances can be planned.

As accident/incident history indicates that the main hazard is collision with obstacles on the helideck due to human error, simple and reproducible take-off and landing procedures are recommended.

In view of the reasons stated above, the future requirement for PC 1 is replaced by the new requirement that the take-off mass takes into account: the procedure; deck-edge miss; and drop down appropriate to the height of the helideck. This will require calculation of take-off mass from information produced by manufacturers reflecting these elements. It is expected that such information will be produced by performance modelling/simulation using a model validated through limited flight testing.

7.4.3 Operations to Helidecks for Helicopters with a MAPSC of more than 19

The original requirement for operations of helicopters with a MAPSC of more than 19 was PC 1 (as set out in OPS 3.470(a)(2)).

However, when operating to helidecks, the problems enumerated in 7.4.2 above are equally applicable to these helicopters. In view of this, but taking into account that increased numbers are (potentially) being carried, such operations are permitted in PC 2 (OPS 3.470(a)(2)) but, in all helideck environments (both hostile and non-hostile), have to satisfy, the additional requirements, set out in 7.4.2 above.

AC-1 to Appendix 1 to OPS 3.517(a)
Helicopter Operations Without an Assured Safe Forced Landing Capability

1. As part of the risk assessment prior to granting an approval under Appendix 1 to OPS 3.517(a), the operator should provide appropriate powerplant reliability statistics available for the helicopter type and the engine type.

2. Except in the case of new engines, such data should show sudden power loss from the set of in-flight shutdown (IFSD) events not exceeding 1 per 100,000 engine hours in a 5 year moving window. However, a rate in excess of this value, but not exceeding 3 per 100,000 engine hours, may be accepted by the Authority after an assessment showing an improving trend.

3. New engines should be assessed on a case-by-case basis.

4. After the initial assessment, updated statistics should be periodically reassessed; any adverse sustained trend will require an immediate evaluation to be accomplished by the operator in consultation with the Authority and the manufacturers concerned. The evaluation may result in corrective action or operational restrictions being applied.

5. The purpose of this paragraph is to provide guidance on how the in-service power plant sudden power loss rate is determined.

5.1. Share of roles between the helicopter and engine Type Certificate Holders (TCH).

a) The provision of documents establishing the in-service sudden power loss rate for the helicopter/engine installation; the interface with the operational Authority of the State of Design should be the Engine TCH or the Helicopter TCH depending on the way they share the corresponding analysis work.

b) The Engine TCH should provide the Helicopter TCH with a document including: the list of in-service power loss events, the applicability factor for each event (if used), and the assumptions made on the efficiency of any corrective actions implemented (if used);

c) The Engine or Helicopter TCH should provide the operational Authority of the State of Design or, where this Authority does not take responsibility, the operational Authority of the State of the Operator, with a document that details the calculation results - taking into account: the events caused by the engine and the events caused by the engine installation; the applicability factor for each event (if used), the assumptions made on the efficiency of any corrective actions implemented on the engine and on the helicopter (if used); and the calculation of the powerplant power loss rate,

5.2 Documentation The following documentation should be updated every year.

5.2.1 The document with detailed methodology and calculation as distributed to the Authority of the State of Design.

5.2.2 A summary document with results of computation as made available on request to any operational Authority.

5.2.3 A Service Letter establishing the eligibility for such operation and defining the corresponding required configuration as provided to the operators.

5.3. Definition of the “sudden in-service power loss”. The sudden in-service power loss is an engine power loss:

- larger than 30 % of the take-off power; and
- occurring during operation; and
- without the occurrence of an early intelligible warning to inform and give sufficient time for the pilot to take any appropriate action.

5.4. Data base documentation.

Each power loss event should be documented, by the engine and/or helicopter TCH’s, as follows:

- incident report number;

- engine type;
- engine serial number;
- helicopter serial number;
- date;
- event type (demanded IFSD, un-demanded IFSD);
- presumed cause;
- applicability factor when used ;
- reference and assumed efficiency of the corrective actions that will have to be applied (if any);

5.5. Counting methodology.

Various methodologies for counting engine power loss rate have been accepted by Authorities. The following is an example of one of these methodologies:

5.5.1 The events resulting from:

- unknown causes (wreckage not found or totally destroyed, undocumented or unproven statements); or
- where the engine or the elements of the engine installation have not been investigated (for example when the engine has not been returned by the customer); or
- an unsuitable or non representative use (operation or maintenance) of the helicopter or the engine are not counted as engine in-service sudden power loss and the applicability factor is 0%.

5.5.2 The events caused by:

- the engine or the engine installation; or
- the engine or helicopter maintenance, when the applied maintenance was compliant with the Maintenance Manuals are counted as engine in-service sudden power loss and the applicability factor is 100%.

5.5.3 For the events where the engine or an element of the engine installation has been submitted to investigation which did not allow to define a presumed cause the applicability factor is 50 %.

5.6. Efficiency of corrective actions.

The corrective actions made by the engine and helicopter manufacturers on the definition or maintenance of the engine or its installation could be defined as mandatory for specific OPS 3 operations. In this case the associated reliability improvement could be considered as mitigating factor for the event. A factor defining the efficiency of the corrective action could be applied to the applicability factor of the concerned event.

5.7. Method of calculation of the powerplant power loss rate.

The detailed method of calculation of the powerplant power loss rate should be documented by engine or helicopter TCH and accepted by the relevant Authority.

AC-2 to Appendix 1 to OPS 3.517(a)
Helicopter Operations Without an Assured Safe Forced Landing Capability

To obtain an approval under Appendix 1 to OPS 3.517(a), the operator conducting operations without an assured safe forced landing capability should implement the following:

1. Attain and then maintain the helicopter/engine modification standard defined by the manufacturer that has been designated to enhance reliability during the take-off and landing phases.

2. Conduct the preventive maintenance actions recommended by the helicopter or engine manufacturer as follows:

2.1 Engine oil spectrometric and debris analysis - as appropriate;

2.2 Engine trend monitoring, based on available power assurance checks;

2.3 Engine vibration analysis (plus any other vibration monitoring systems where fitted).

2.4 Oil consumption monitoring.

3. The Usage Monitoring System should fulfil at least the following:

3.1 Recording of the following data:

- Date and time of recording, or a reliable means of establishing these parameters;
- Amount of flight hours recorded during the day plus total flight time;
- N1 (gas producer RPM) cycle count;
- N2 (power turbine RPM) cycle count (if the engine features a free turbine);
- Turbine temperature exceedance: value, duration;
- Power-shaft torque exceedance: value, duration (if a torque sensor is fitted);
- Engine shafts speed exceedance: value, duration;

3.2 Data storage of the above parameters, if applicable, covering the maximum flight time in a day, and not less than 5 flight hours, with an appropriate sampling interval for each parameter.

3.3 The system should include a comprehensive self-test function with a malfunction indicator and a detection of power-off or sensor input disconnection.

3.4 A means should be available for downloading and analysis of the recorded parameters. Frequency of downloading should be sufficient to ensure data is not lost through over-writing.

3.5 The analysis of parameters gathered by the usage monitoring system, the frequency of such analysis and subsequent maintenance actions should be described in the maintenance documentation.

3.6 The data should be stored in an acceptable form and accessible to the Authority, for at least 24 months.

4. Include take-off and landing procedures in the operations manual, where they do not already exist in the Helicopter Flight Manual.

5. Establish training for flight crew which should include the discussion, demonstration, use and practice of the techniques necessary to minimise the risks;

6. Report to the manufacturer any loss of power control, engine shutdown (precautionary or otherwise) or power unit failure for any cause (excluding simulation of power unit failure during training). The content of each report should provide:

- Date and time;
- Operator (and Maintenance organisations where relevant);
- Type of helicopter and description of operations;
- Registration and serial number of airframe;
- Engine type and serial number;
- Power unit modification standard where relevant to failure;

- Engine position;
- Symptoms leading up to the event.
- Circumstances of power unit failure including phase of flight or ground operation;
- Consequences of the event;
- Weather/environmental conditions;
- Reason for power unit failure – if known;
- In case of an In Flight Shut Down (IFSD), nature of the IFSD (Demanded/Un-demanded);
- Procedure applied and any comment regarding engine restart potential;
- Engine hours and cycles (from new and last overhaul);
- Airframe flight hours;
- Rectification actions applied including, if any, component changes with part number and serial number of the removed equipment; and
- Any other relevant information

AC OPS 3.520(a)(3)
Procedure for Continued Operations to Helidecks
See OPS 3.520(a)(3) and 3.535(a)(3)

1 Factors to be considered when taking off from or landing on a helideck

1.1 In order to take account of the considerable number of variables associated with the helideck environment, each take-off and landing may require a slightly different profile. Factors such as helicopter mass and centre of gravity, wind velocity, turbulence, deck size, deck elevation and orientation, obstructions, power margins, platform gas turbine exhaust plumes etc., will influence both the take-off and landing. In particular, for the landing, additional considerations such as the need for a clear go-around flight path, visibility and cloud base etc., will affect the Commander's decision on the choice of landing profile. Profiles may be modified, taking account of the relevant factors noted above and the characteristics of individual helicopter types.

2 Terminology

2.1 See OPS 3.480 as appropriate.

3 Performance

3.1 To perform the following take-off and landing profiles, adequate all engines operating (AEO) hover performance at the helideck is required. In order to provide a minimum level of performance, data (derived from the Flight Manual AEO out of ground effect (OGE), with wind accountability) should be used to provide the maximum take-off or landing mass. Where a helideck is affected by downdrafts or turbulence or hot gases, or where the take-off or landing profile is obstructed, or the approach or take-off cannot be made into wind, it may be necessary to decrease this take-off or landing mass by using a suitable calculation method recommended by the manufacturer. The helicopter mass should not exceed that required by OPS 3.520(a)(1) or OPS 3.535(a)(1).

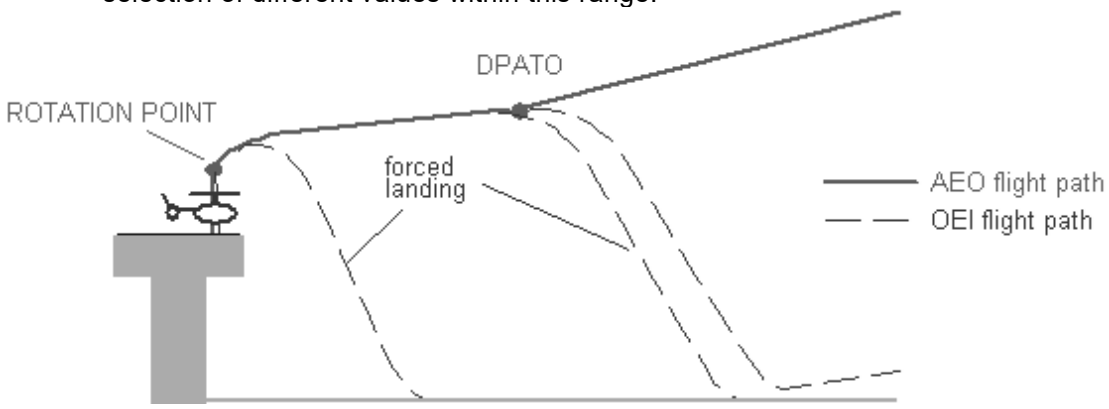
Note 1: For helicopter types no longer supported by the manufacturer, data may be established by the operator, provided they are acceptable to the Authority.

4 Take-off profile

4.1 The take-off should be performed in a dynamic manner ensuring that the helicopter continuously moves vertically from the hover to the Rotation Point (RP) and thence into forward flight. If the manoeuvre is too dynamic then there is an increased risk of losing spatial awareness (through loss of visual cues) in the event of a rejected take-off, particularly at night.

4.2 If the transition to forward flight is too slow, the helicopter is exposed to an increased risk of contacting the deck edge in the event of an engine failure at or just after the point of cyclic input (RP).

4.3 It has been found that the climb to RP is best made between 110% and 120% of the power required in the hover. This power offers a rate of climb which assists with deck-edge clearance following power unit failure at RP, whilst minimising ballooning following a failure before RP. Individual types will require selection of different values within this range.



5 Selection of a lateral visual cue

5.1 In order to obtain the maximum performance in the event of an engine failure being recognised at or just after RP, the RP must be at its optimum value, consistent with maintaining the necessary visual cues. If an engine failure is recognised just before RP, the helicopter, if operating at a low mass, may 'balloon' a significant height before the reject action has any effect. It is, therefore, important that the Pilot Flying selects a lateral visual marker and maintains it until the RP is achieved, particularly on decks with few visual cues. In the event of a rejected take-off, the lateral marker will be a vital visual cue in assisting the pilot to carry out a successful landing.

6 Selection of the rotation point

6.1 The optimum RP should be selected to ensure that the take-off path will continue upwards and away from the deck with All Engines Operating (AEO), but minimising the possibility of hitting the deck edge due to the height loss in the event of an engine failure at or just after RP.

6.2 The optimum RP may vary from type to type. Lowering the RP will result in a reduced deck edge clearance in the event of an engine failure being recognised at or just after RP. Raising the RP will result in possible loss of visual cues, or a hard landing in the event of an engine failure just prior to RP.

7 Pilot reaction times

7.1 Pilot reaction time is an important factor affecting deck edge clearance in the event of an engine failure prior to or at RP. Simulation has shown that a delay of one second can result in a loss of up to 15 ft in deck edge clearance.

8 Variation of wind speed

8.1 Relative wind is an important parameter in the achieved take-off path following an engine failure; wherever practicable, take-off should be made into wind. Simulation has shown that a 10 knot wind can give an extra 5 ft deck edge clearance compared to a zero wind condition.

9 Position of the helicopter relative to the deck edge

9.1 It is important to position the helicopter as close to the deck edge (including safety nets) as possible whilst maintaining sufficient visual cues, particularly a lateral marker.

9.2 The ideal position is normally achieved when the rotor tips are positioned at the forward deck edge. This position minimises the risk of striking the deck edge following recognition of an engine failure at or just after RP. Any take-off heading which causes the helicopter to fly over obstructions below and beyond the deck edge should be avoided if possible. Therefore, the final take-off heading and position will be a compromise between the take-off path for least obstructions, relative wind, turbulence and lateral marker cue considerations.

10 Actions in the event of an engine failure at or just after RP

10.1 Once committed to the continued take-off, it is important, in the event of an engine failure, to rotate the aircraft to the optimum attitude in order to give the best chance of missing the deck edge. The optimum pitch rates and absolute pitch attitudes, should be detailed in the profile for the specific type.

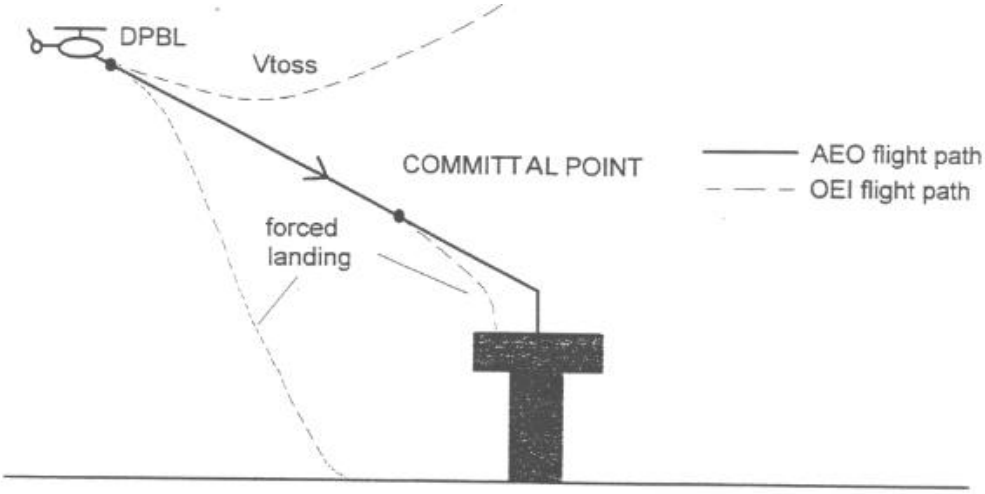
11 Take-off from helidecks which have significant movement

11.1 This technique should be used when the helideck movement and any other factors, e.g. insufficient visual cues, makes a successful rejected take-off unlikely. Weight should be reduced to permit an improved one engine inoperative capability, as necessary.

11.2 The optimum take-off moment is when the helideck is level and at its highest point, e.g. horizontal on top of the swell. Collective pitch should be applied positively and sufficiently to make an immediate transition to climbing forward flight. Because of the lack of a hover, the take-off profile should be planned and briefed prior to lift off from the deck.

12 Standard landing profile

12.1 The approach should be commenced into wind to a point outboard of the helideck. Rotor tip clearance from the helideck edge should be maintained until the aircraft approaches this position at the requisite height (type dependent) with approximately 10 kts of ground-speed and a minimal rate of descent. The aircraft is then flown on a flight path to pass over the deck edge and into a hover over the safe landing area.



13 Offset landing profile

13.1 If the normal landing profile is impracticable due to obstructions and the prevailing wind velocity, the offset procedure may be used. This should involve flying to a hover position, approximately 90° offset from the landing point, at the appropriate height and maintaining rotor tip clearance from the deck edge. The helicopter should then be flown slowly but positively sideways and down to position in a low hover over the landing point. Normally, CP will be the point at which helicopter begins to transition over the helideck edge.

14 Training

14.1 These techniques should be covered in the training required by OPS 3, Subpart N.

AMC OPS 3.520 & 3.535
Take-off and landing
See OPS 3.520 and OPS 3.535

1 This AMC describes three types of operation to/from helidecks and elevated heliports by helicopters operating in Performance Class 2.

2 In two cases of take-off and landing, exposure time is used. During the exposure time (which is only approved for use when complying with OPS 3.517(a)) the probability of a power unit failure is regarded as extremely remote. If a power unit failure (engine failure) occurs during the exposure time a safe force landing may not be possible.

3 Take Off - Non-Hostile Environment (without an approval to operate with an exposure time) OPS 3.520(a)(2).

3.1 Figure 1 shows a typical take-off profile for Performance Class 2 operations from a helideck or an elevated heliport in a non-hostile environment.

3.2 If an engine failure occurs during the climb to the rotation point, compliance with 3.520(a)(2) will enable a safe landing or a safe forced landing on the deck.

3.3 If an engine failure occurs between the rotation point and the DPATO, compliance with 3.520(a)(2) will enable a safe forced landing on the surface, clearing the deck edge.

3.4 At or after the DPATO, the OEI flight path should clear all obstacles by the margins specified in OPS 3.525.

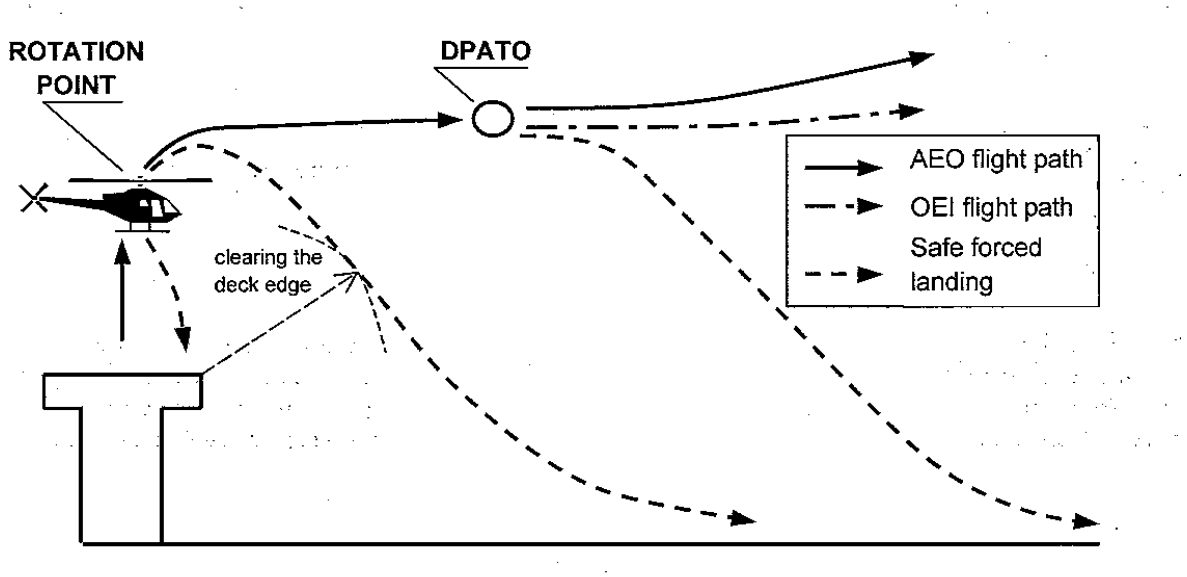


Figure 1

4 Take Off - Non-Hostile Environment (with exposure time) OPS 3.520(a)(3)

4.1 Figure 2 shows a typical take-off profile for Performance Class 2 operations from a helideck or an elevated heliport in a non-hostile environment (with exposure time).

4.2 If an engine failure occurs after the exposure time and before DPATO, compliance with 3.520(a)(3) will enable a safe force landing on the surface.

4.3 At or after the DPATO, the OEI flight path should clear all obstacles by the margins specified in OPS 3.525.

Note: an engine failure outside of exposure time should result in a safe-forced- landing or safe continuation of the flight.

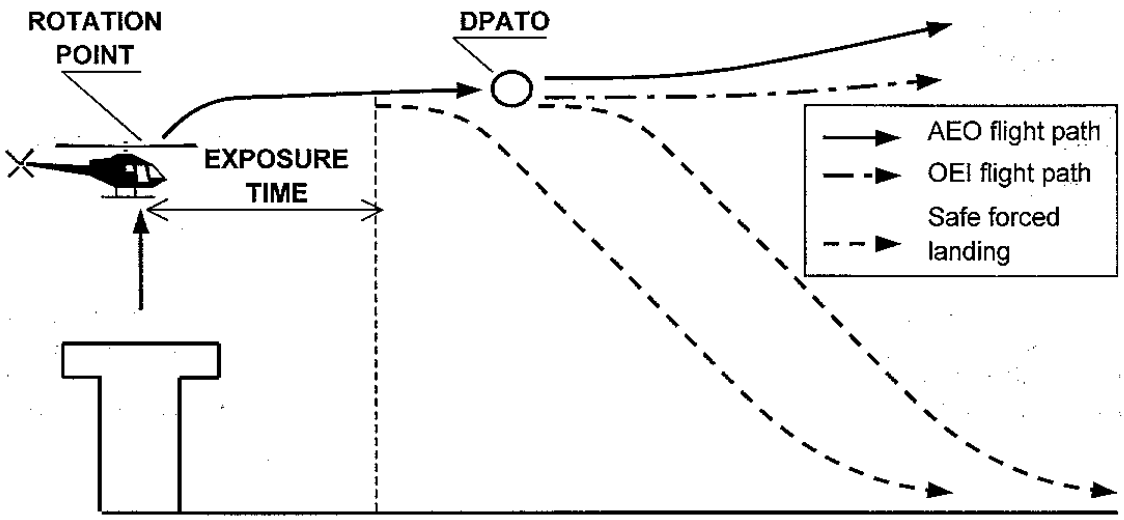


Figure 2

5 Take Off - Non-Congested Hostile Environment (with exposure time) OPS 3.520(a)(4)

5.1 Figure 3 shows a typical take off profile for Performance Class 2 operations from a helideck or an elevated heliport in a non-congested hostile environment (with exposure time).

5.2 If an engine failure occurs after the exposure time the helicopter is capable of continuing the flight.

5.3 At or after the DPATO, the OEI flight path should clear all obstacles by the margins specified in OPS 3.525.

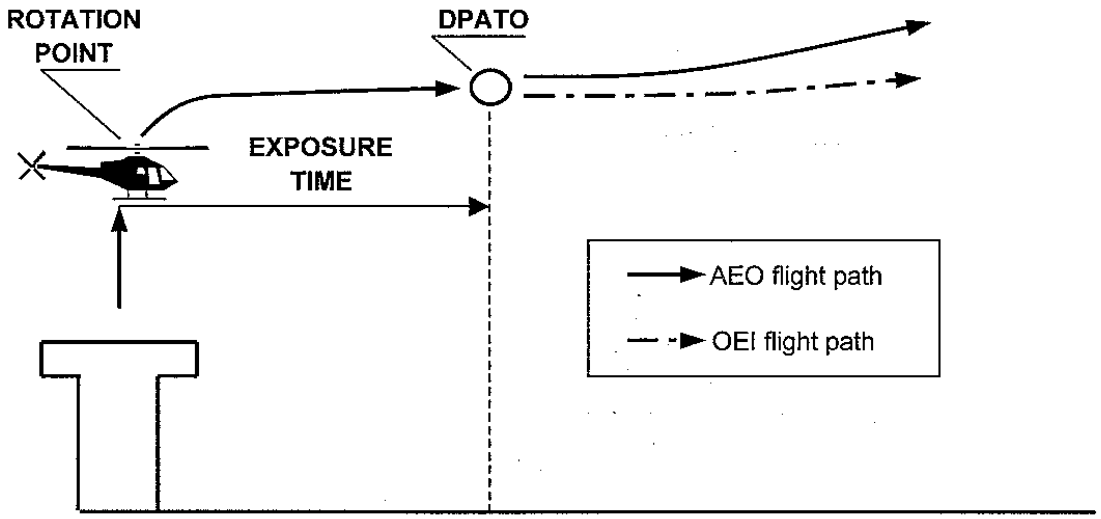


Figure 3

6. Landing - Non-Hostile Environment (without an approval to operate with an exposure time) OPS 3.535(a)(2)

6.1 Figure 4 shows a typical landing profile for Performance Class 2 operations to a helideck or an elevated heliport in a non-hostile environment.

6.2 The DPBL is defined as a “window” in terms of airspeed, rate of descent, and height above the landing surface. If an engine failure occurs before the DPBL, the pilot may elect to land or to execute a balked landing.

6.3 In the event of an engine failure being recognised after the DPBL and before the committal point, compliance with 3.535(a)(2) will enable a safe force landing on the surface.

6.4 In the event of an engine failure at or after the committed point, compliance with 3.535(a)(2) will enable a safe force landing on the deck.

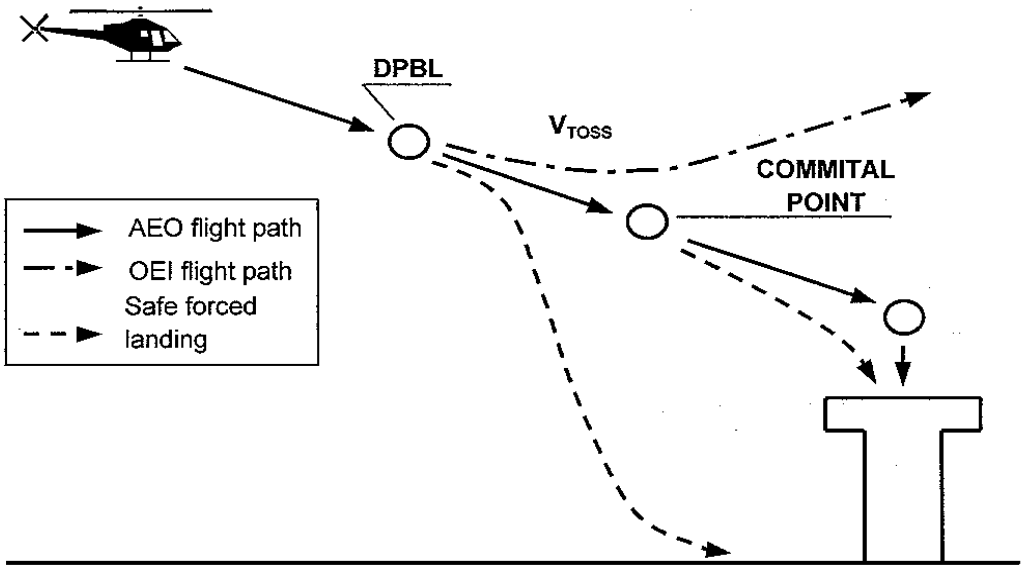


Figure 4

7 Landing - Non-Hostile Environment (with exposure time) OPS 3.535(a)(3)

7.1 Figure 5 shows a typical landing profile for Performance Class 2 operations to a helideck or an elevated heliport in a non-hostile environment (with exposure time).

7.2 The DPBL is defined as a “window” in terms of airspeed, rate of descent, and height above the landing surface. If an engine failure occurs before the DPBL, the pilot may elect to land or to execute a balked landing.

7.3 In the event of an engine failure being recognised before the exposure time compliance with 3.535(a)(3) will enable a safe force landing on the surface.

7.4 In the event of an engine failure after the exposure time, compliance with 3.535(a)(3) will enable a safe force landing on the deck.

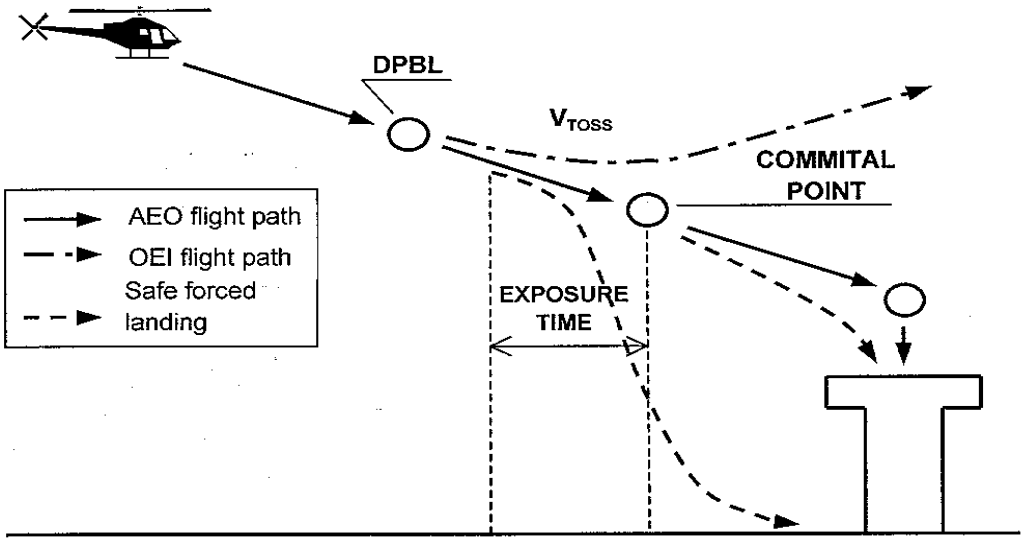


Figure 5

8. Landing - Non-Congested Hostile Environment (with exposure time) OPS 3.535(a)(4)

8.1 Figure 6 shows a typical landing profile for Performance Class 2 operations to a helideck or an elevated heliport in a non-congested hostile environment (with exposure time).

8.2 In the event of an engine failure at any point during the approach and landing phase up to the start of exposure time, compliance with OPS 3.535(a)(4) will enable the helicopter, after clearing all obstacles under the flight path, to continue the flight.

8.3 In the event of an engine failure after the exposure time, compliance with 3.535(a)(4) will enable a safe force landing on the deck.

AC/AMC I

PERFORMANCE CLASS 3

AC OPS 3.540(b)
The Take-off and Landing Phases (Performance Class 3)
See OPS 3.540(b)

1. To understand the use of ground level exposure in Performance Class 3, it is important first to be aware of the logic behind the use of 'take-off and landing phases'; once this is clear, it is easier to appreciate the aspects and limits of the use of ground level exposure. This AC shows the derivation of the term from the ICAO definition of the 'en-route phase' and then gives practical examples of the use, and limitations on the use, of ground level exposure in OPS 3.540(b).

2. The take-off phase in Performance Class 1 and Performance Class 2 may be considered to be bounded by 'the specified point in the take-off' from which the Take-off Flight Path begins.

2.1 In Performance Class 1 this specified point is defined as "the end of the Take-off Distance Required".

2.2 In Performance Class 2 this specified point is defined as "DPATO or, as an alternative, no later than 200 ft above the take-off surface".

2.3 There is no simple equivalent point for bounding of the landing in Performance Class 1 & 2.

3. Take-off Flight Path is not used in Performance Class 3 and, consequently, the term 'take-off and landing phases' is used to bound the limit of exposure. For the purpose of Performance Class 3, the take-off and landing phases are considered to be bounded by:

   - for the take-off no later than Vy or 200 ft above the take-off surface; and

   - for the landing 200 ft above the landing surface.

   Note: in ICAO Annex 6 Part III, En- route phase is defined as being "That part of the flight from the end of the take-off and initial climb phase to the commencement of the approach and landing phase. " The use of take-off and landing phase in this text is used to distinguish the take-off from the initial climb, and the landing from the approach: they are considered to be complimentary and not contradictory.

4. Ground level exposure – and exposure for elevated heliports/helidecks in a non-hostile environment – is permitted for operations under an approval in accordance with Appendix 1 to OPS 3.517(a). Exposure in this case is limited to the 'take-off and landing phases'. What is the practical effect of this bounding of exposure? Consider a couple of examples:

   A clearing: The operator may consider a take-off/landing in a clearing when there is sufficient power, with all engines operating, to clear all obstacles in the take-off path by an adequate margin (this, in ICAO, is meant to indicate 35 ft). Thus, the clearing may be bounded by bushes, fences, wires and, in the extreme, by power lines, high trees etc. Once the obstacle has been cleared – by using a steep or a vertical climb (which itself may infringe the HV diagram) - the helicopter reaches Vy or 200 ft, and from that point a safe forced landing must be possible. The effect is that whilst operation to a clearing is possible, operation to a clearing in the middle of a forest is not (except when operated in accordance with Appendix 1 to OPS 3.005(e)).

   A heliport surrounded by rocks: the same applies when operating to a landing site that is surrounded by rocky ground. Once Vy or 200ft has been reached, a safe forced landing must be possible.

   An elevated heliport/helideck: when operating to an elevated heliport/helideck in Performance Class 3, exposure is considered to be twofold: firstly, to a deck-edge strike if the engine fails after the decision to transition has been taken; and secondly, to operations in the HV diagram due to the height of the heliport/helideck. Once the take-off surface has been cleared and the helicopter has reached the knee of the HV diagram, the helicopter should be capable of making a safe forced landing.

5. Operation in accordance with OPS 3.540(b) does not permit excursions into a hostile environment per se and is specifically concerned with the absence of space to abort the take-off or landing when the take-off and landing space are limited; or when operating in the HV diagram.

6. Specifically, the use of this exception to the requirement for a safe forced landing (during take-off or landing) does not permit semi-continuous operations over a hostile environment such as a forest or hostile sea area. It can therefore be seen as a limited alleviation from OPS 3.540(a)(2) which states that: “operations are only conducted to/from those heliports and over such routes, areas and diversions contained in a non-hostile environment”

AMC to OPS 3.541
Operations of Helicopters in Performance Class 3 in IMC
See OPS 3.541

Airworthiness and operations requirements must satisfy the following**:**

1. Engine Reliability

1.1 Attaining and maintaining approval for engines used by helicopters operating in performance Class 3 in IMC:

1.1.1 In order to attain initial approval for existing in-service engine types, reliability shall be shown to have a nominal power loss rate of less than 1 per 100 000 engine hours based on a risk management process.

Note: Power loss in this context is defined as any significant loss of power, the cause of which may be traced to engine or engine component, design, maintenance or installation, including design or installation of the fuel ancillary or engine control systems. (See AC OPS 3.541)

1.1.2 In order to attain initial approval for new engine types, the State of Design shall assess engine models for acceptance for operations in performance Class 3 in IMC on a case-by-case basis.

1.1.3 In order to maintain approval, the State of Design shall, through the continuing airworthiness process, ensure that engine reliability remains consistent with the intent of the Standard contained in para 1.1.1.

1.2 The operator shall be responsible for a programme for ongoing engine trend monitoring.

1.3 To minimize the probability of in-flight engine failure, the engine shall be equipped with:

a. for turbine engines: a re-ignition system that activates automatically or a manually selectable continuous ignition system unless the engine certification has determined that such a system is not required, taking into consideration the likely environmental conditions in which the engine is to be operated;

b. a magnetic particle detection or equivalent system that monitors the engine, accessories gearbox, and reduction gearbox, and which includes a flight deck caution indication; and

c. a means that would permit continuing operation of the engine through a sufficient power range to safely complete the flight in the event of any reasonably probable failure of the fuel control unit.

2. Systems and Equipment

Helicopters operating in performance Class 3 in IMC shall be equipped with the following systems and equipment intended to ensure continued safe flight or to assist in achieving a safe forced landing after an engine failure, under all allowable operating conditions:

a. electrical loads of all required instruments and equipment necessary for safe emergency operations of the helicopter for at least one hour; and

b. an emergency electrical supply system of sufficient capacity and endurance, following loss of all normally generated either two separate electrical generating systems, each one capable of supplying all probable combinations of continuous in-flight electrical loads for instruments, equipment and systems required in IMC; or a primary electrical source and a standby battery or other alternate source of electric power that is capable of supplying 150 per cent of power to, as a minimum:

Note: If a battery is used to satisfy the requirement for a second power source (see 2 a) above), an additional electrical power supply may not be required.

(i) maintain the operation of all essential flight instruments, communication and navigation systems during a descent from the maximum certificated altitude in an autorotational configuration to the completion of a landing;

(ii) maintain the operation of the stabilisation system, if applicable;

(iii) lower the landing gear, if applicable;

(iv) where required, provide power to one pitot heater, which must serve an airspeed indicator clearly visible to the pilot;

(v) provide for the operation of the landing light;

(vi) provide for one engine restart, if applicable; and

(vii) provide for the operation of the radio altimeter;

c. a radio altimeter;

d. an autopilot if intended as a substitute for a second pilot. In these cases, the Authority, as the State of Operator, shall ensure the operator's approval clearly states any conditions or limitations on its use;

e. a means to provide for at least one attempt at engine re-start;

f. an area navigation system approved for use in IFR, capable of being used to locate suitable landing areas in the event of an emergency;

g. a landing light that is independent of retractable landing gear and is capable of adequately illuminating the touchdown area in a night forced landing; and

h. an engine fire warning system.

3. Minimum Serviceability Requirements — Operating Equipment

The Authority shall specify the minimum serviceability requirements for operating equipment in helicopters operating in performance Class 3 in IMC.

4. Operations Manual Information

The operations manual shall include limitations, procedures, approval status and other information relevant to operations in performance Class 3 in IMC.

5. Event Reporting

5.1 The operator approved to conduct operations by helicopters in performance Class 3 in IMC shall report all significant failures, malfunctions or defects to the Authority who in turn shall notify the State of Design.

5.2 The Authority shall monitor operations in performance Class 3 in IMC so as to be able to take any actions necessary to ensure that the intended safety level is maintained. The Authority shall notify major events or trends of particular concern to the appropriate type certificate holder and the State of Design.

6. Operator Planning

Operator route planning shall take account of all relevant information in the assessment of intended routes or areas of operations, including the following:

a. the nature of the terrain to be overflown, including the potential for carrying out a safe forced landing in the event of an engine failure or major malfunction;

b. weather information, including seasonal and other adverse meteorological influences that may affect the flight; and

c. other criteria and limitations as specified by the Authority.

7. Flight Crew Experience, Training and Checking

7.1 The Authority shall prescribe the minimum flight crew experience for helicopters operating in performance Class 3 in IMC.

7.2 The operator's flight crew training and checking programme shall be appropriate to operations in performance Class 3 in IMC, covering normal, abnormal and emergency procedures and, in particular, detection of engine failure including descent to a forced landing in IMC and, for single engine helicopters, entry into a stabilised autorotation.

8. Operator Certification or Validation

The operator shall demonstrate the ability to conduct operations in performance Class 3 in IMC through a certification and approval process specified by the Authority.

AC OPS 3.541
Operations of Helicopters in Performance Class 3 in IMC
See OPS 3.541
(See AMC OPS 3.541)

1. Purpose and Scope

The purpose of this attachment is to give additional guidance on the airworthiness and operational requirements of AMC OPS 3.541, which have been designed to meet the overall level of safety intended for approved operations in performance Class 3 in IMC.

2. Engine Reliability

2.1 The power loss rate required to meet OPS 3.541 and AMC OPS 3.541, paragraph 1 should be established based on data from commercial air transport operations supplemented by suitable data from other operations in similar theatres of operations. Service experience is needed on which to base the judgement, and this should include a number of hours, acceptable to the State of Design, on the actual helicopter/engine combination unless additional testing has been carried out or experience on sufficiently similar variants of the engine is available.

2.2 In assessing engine reliability, evidence should be derived from a world fleet database covering as large a sample as possible of operations considered to be representative, compiled by the appropriate type certificate holders and reviewed by the States of Design. Since flight hour reporting is not mandatory for many types of operators, appropriate statistical estimates may be used to develop the engine reliability data. Data for individual operators approved for these operations including trend monitoring and event reports should also be monitored and reviewed by the Authority to ensure that there is no indication that the operator's experience is unsatisfactory.

2.2.1 Engine trend monitoring should include the following:

a. an oil consumption monitoring programme based on the manufacturer's recommendations; and

b. an engine condition monitoring programme describing the parameters to be monitored, the method of data collection and the corrective action process; this should be based on the manufacturer's recommendations. The monitoring is intended to detect engine deterioration at an early stage to allow for corrective action before safe operation is affected.

2.2.2 A reliability programme should be established covering the engine and associated systems. The engine programme should include engine hours flown in the period and the power loss rate for all causes established on an appropriate statistical basis. The event reporting process should cover all items relevant to the ability to operate safely in IMC. The data should be available for use by the type certificate holder and the State of Design so as to establish that the intended reliability levels are being achieved. Any sustained adverse trend should result in an immediate evaluation by the operator in consultation with the State(s) of Design and type certificate holders with a view to determining actions to restore the intended safety level.

Note: The actual period selected should reflect the global utilisation and the relevance of the experience included (e.g. early data may not be relevant due to subsequent mandatory modifications which affected the power loss rate). After the introduction of a new engine variant and while global utilization is relatively low, the total available experience may have to be used to try to achieve a statistically

meaningful average.

2.3 Power loss rate should be determined as a moving average over an appropriate period. Power loss rate, rather than in-flight shutdown rate, has been used as it is considered to be more appropriate for a helicopter operating in performance Class 3. If a failure occurs on a helicopter operating in performance Class 1 or 2 that causes a major, but not total, loss of power on one engine, it is likely that the engine will be shut down since positive engine-out performance is still available, whereas on a helicopter operating in performance Class 3 it may well be decided to make use of the residual power to stretch the glide distance.

3. Operations Manual

The operations manual should include all necessary information relevant to operations by helicopters operating in performance Class 3 in IMC. This should include all of the additional equipment, procedures and training required for such operations, route and/or area of operation and likely landing area (including planning and operating minima).

4. Operator Certification or Validation

The operator certification or validation process specified by the State of the Operator should ensure the adequacy of the operator's procedures for normal, abnormal and emergency operations, including actions following engine, systems or equipment failures. In addition to the normal requirements for operator certification or validation, the following items should be addressed in relation to operations by helicopters operating in performance Class 3 in IMC:

a. confirmation of the achieved engine reliability of the helicopter engine combination (see AMC OPS 3.541, paragraph 1);

b. specific and appropriate training and checking procedures as described in AMC OPS 3.541, paragraph 7;

c. a maintenance programme which is extended to address the equipment and systems referred to in AMC OPS 3.541, paragraph 2;

d. an MEL modified to address the equipment and systems necessary for operations in IMC;

e. planning and operating minima appropriate to operations in IMC;

f. departure and arrival procedures and any route/area limitations;

g. pilot qualifications and experience; and

h. the operations manual, including limitations, emergency procedures, routes or areas of operation, the MEL and normal procedures related to the equipment referred to in AMC OPS 3.541, paragraph 2.

5. Operational Approval and Maintenance Programme Requirements

5.1 Approval to undertake operations by helicopters in performance Class 3 in IMC specified in an air operator certificate or equivalent document should include the particular airframe/engine combinations, including the current type design standard for such operations, the specific helicopters approved, and the areas or routes of such operations.

5.2 The operator's maintenance management exposition should include a statement of certification of the additional equipment required, and of the maintenance and reliability programme for such equipment, including the engine.

AC/AMC J

MASS & BALANCE

AC OPS 3.605
Mass Values
See OPS 3.605

In accordance with ICAO Annex 5 and the International System of Units (SI), the actual and limiting masses of helicopters, the payload and its constituent elements, the fuel load etc., are expressed in OPS 3 in units of mass (kg). However, in most approved Flight Manuals and other operational documentation, these quantities are published as weights in accordance with the common language. In the SI system, a weight is a force rather than a mass. Since the use of the term 'weight' does not cause any problem in the day-to-day handling of helicopters, its continued use in operational applications and publications is acceptable.

AMC OPS 3.605(e)
Fuel Density
See OPS 3.605(e)

1 If the actual fuel density is not known, the operator may use the standard fuel density values specified in the Operations Manual for determining the mass of the fuel load. Such standard values should be based on current fuel density measurements for the airports or areas concerned. Typical fuel density values are:

a.	Gasoline (piston engine fuel)	-	0·71
b.	Jet fuel JP 1	-	0·79
c.	Jet fuel JP 4	-	0·76
d.	Oil	-	0·88

AMC Appendix 1 to OPS 3.605(a)(2)(iii)
Accuracy of Weighing Equipment
See Appendix 1 to OPS 3.605(a)(2)(iii)

1 The mass of the helicopter as used in establishing the dry operating mass and the centre of gravity must be established accurately. Since a certain model of weighing equipment is used for initial and periodic weighing of helicopters of widely different mass classes, one single accuracy criterion for weighing equipment cannot be given. However, the weighing accuracy is considered satisfactory if the following accuracy criteria are met by the individual scales/cells of the weighing equipment used:

a.	For a scale/cell load below 2,000 kg	-	an accuracy of ± 1%;
b.	For a scale/cell load from 2,000 kg to 20,000 kg	-	an accuracy of ± 20 kg; and
c.	For a scale/cell load above 20,000 kg	-	an accuracy of ± 0·1 %.

AMC Appendix 1 to OPS 3.60 (d)
Centre of Gravity Limits
See Appendix 1 to OPS 3.605 (d)

1 In the Certificate Limitations section of the Helicopter Flight Manual, forward and aft centre of gravity (CG) limits are specified. These limits ensure that the certification stability and control criteria are met throughout the whole flight. The operator should ensure that these limits are observed by defining operational procedures or a CG envelope which compensates for deviations and errors as listed below:

1.1 Deviations of actual CG at empty or operating mass from published values due, for example, to weighing errors, unaccounted modifications and/or equipment variations.

1.2 Deviations in fuel distribution in tanks from the applicable schedule.

1.3 Deviations in the distribution of baggage and cargo in the various compartments as compared with the assumed load distribution as well as inaccuracies in the actual mass of baggage and cargo.

1.4 Deviations in actual passenger seating from the seating distribution assumed when preparing the mass and balance documentation. (See Note)

1.5 Deviations of the actual CG of cargo and passenger load within individual cargo compartments or cabin sections from the normally assumed mid position.

1.6 Deviations of the CG caused by application of the prescribed fuel usage procedure (unless already covered by the certified limits).

1.7 Deviations caused by in-flight movement of cabin crew, pantry equipment and passengers.

Note: Large CG errors may occur when 'free seating' (freedom of passengers to select any seat when entering the helicopter) is permitted. Although in most cases reasonably even longitudinal passenger seating can be expected, there is a risk of an extreme forward or aft seat selection causing very large and unacceptable CG errors (assuming that the balance calculation is done on the basis of an assumed even distribution). The largest errors may occur at a load factor of approximately 50% if all passengers are seated in either the forward or aft half of the cabin. Statistical analysis indicates that the risk of such extreme seating adversely affecting the CG is greatest on small helicopters.

AMC OPS 3.620(a
Passenger Mass Established by Use of a Verbal Statement
See OPS 3.620(a)

1 When asking each passenger on helicopters with less than 6 passenger seats for his/her mass (weight), a specific constant should be added to account for clothing. This constant should be determined by the operator on the basis of studies relevant to his particular routes, etc. and should not be less than 4 kg.

2 Personnel boarding passengers on this basis should assess the passenger's stated mass and the mass of passengers' clothing to check that they are reasonable. Such personnel should have received instruction on assessing these mass values.

AMC to Appendix 1 to OPS 3.620(h)
Guidance on Passenger Weighing Surveys
See Appendix 1 to OPS 3.620(h)

1 Operators seeking approval to use standard passenger masses differing from those prescribed in OPS 3.620, Tables 1 and 2, on similar routes or networks may pool their weighing surveys provided that:

a. The Authority has given prior approval for a joint survey;

b. The survey procedures and the subsequent statistical analysis meet the criteria of Appendix 1 to OPS 3.620(h); and

c. In addition to the joint weighing survey results, results from individual operators participating in the joint survey should be separately indicated in order to validate the joint survey results.

AC Appendix 1 to OPS 3.620(h)
Guidance on Passenger Weighing Surveys
See Appendix 1 to OPS 3.620(h)

1 This AC summarises several elements of passenger weighing surveys and provides explanatory information.

2 Information to the Authority. The operator should advise the Authority about the intent of the passenger weighing survey, explain the survey plan in general terms and obtain prior approval to proceed (OPS 3.620(h) refers).

3 Detailed survey plan

3.1 The operator should establish and submit for approval to the Authority a detailed weighing survey plan that is fully representative of the operation, i.e. the network or route under consideration and the survey should involve the weighing of an adequate number of passengers (OPS 3.620(h)).

3.2 A representative survey plan means a weighing plan specified in terms of weighing locations, dates and flight numbers giving a reasonable reflection of the operator’s timetable and/or area of operation (See Appendix 1 to OPS 3.620(h), sub-paragraph (a)(1)).

3.3 The minimum number of passengers to be weighed is the highest of the following (See Appendix 1 to OPS 3.620(h) sub-paragraph (a)):

a. The number that follows from the general requirement that the sample should be representative of the total operation to which the results will be applied; this will often prove to be the overriding requirement; or

b. The number that follows from the statistical requirement specifying the accuracy of the resulting mean values which should be at least 2% for male and female standard masses and 1% for all adult standard masses, where applicable. The required sample size can be estimated on the basis of a pilot sample (at least 100 passengers) or from a previous survey. If analysis of the results of the survey indicates that the requirements on the accuracy of the mean values for male or female standard masses or all adult standard masses, as applicable, are not met, an additional number of representative passengers should be weighed in order to satisfy the statistical requirements.

3.4 To avoid unrealistically small samples a minimum sample size of 2000 passengers (males + females) is also required, except for small helicopters where in view of the burden of the large number of flights to be weighed to cover 2000 passengers, a lesser number is considered acceptable.

4 Execution of weighing programme

4.1 At the beginning of the weighing programme it is important to note, and to account for, the data requirements of the weighing survey report (See paragraph 7 below).

4.2 As far as is practicable, the weighing programme should be conducted in accordance with the specified survey plan.

4.3 Passengers and all their personal belongings should be weighed as close as possible to the boarding point and the mass, as well as the associated passenger category (male/female/child), should be recorded.

5 Analysis of results of weighing survey

5.1 The data of the weighing survey should be analysed as explained in AMC OPS 3.620(h). To obtain an insight to variations per flight, per route etc. this analysis should be carried out in several stages, i.e. by flight, by route, by area, inbound/outbound, etc. Significant deviations from the weighing survey plan should be explained as well as their possible effect(s) on the results.

6 Results of the weighing survey

6.1 The results of the weighing survey should be summarised. Conclusions and any proposed deviations from published standard mass values should be justified. The results of a passenger weighing survey are average masses for passengers, including hand baggage, which may lead to proposals to adjust the standard mass values given in OPS 3.620 Tables 1, 2 and 3. As stated in Appendix 1 to OPS 3.620(h), these averages, rounded to the nearest whole number may, in principle, be applied as standard mass values for males and females on helicopters with 20 and more passenger seats. Because of variations in actual passenger masses, the total passenger load also varies and statistical analysis indicates that the risk of a significant overload becomes unacceptable for helicopters with less than 20 seats. This is the reason for passenger mass increments on small helicopters.

6.2 The average masses of males and females differ by some 15 kg or more and because of uncertainties in the male/female ratio the variation of the total passenger load is greater if all adult standard masses are used than when using separate male and female standard masses. Statistical analysis indicates that the use of all adult standard mass values should be limited to helicopters with 30 passenger seats or more.

6.3 As indicated in Appendix 1 to OPS 3.620(h), standard mass values for all adults must be based on the averages for males and females found in the sample, taking into account a reference male/female ratio of 80/20 for all flights. The operator may, based on the data from his weighing programme, or by proving a different male/female ratio, apply for approval of a different ratio on specific routes or flights.

7 Weighing survey report

7.1 The weighing survey report, reflecting the content of paragraphs 1–6 above, should be prepared in a standard format as follows:

WEIGHING SURVEY REPORT

1 Introduction

Objective and brief description of the weighing survey

2 Weighing survey plan

Discussion of the selected flight number, heliports, dates, etc.

Determination of the minimum number of passengers to be weighed.

Survey plan.

3 Analysis and discussion of weighing survey results

Significant deviations from survey plan (if any).

Variations in means and standard deviations in the network.

Discussion of the (summary of) results.

4 Summary of results and conclusions

Main results and conclusions.

Proposed deviations from published standard mass values.

Attachment 1

Applicable summer and/or winter timetables or flight programmes.

Attachment 2

Weighing results per flight (showing individual passenger masses and sex); means and standard deviations per flight, per route, per area and for the total network.

AMC OPS 3.620(i) & (j)
Adjustment of Standard Masses
See OPS 3.620(i) & (j)

1. When standard mass values are used, OPS 3.620(i) and 3.620(j) require the operator to identify and adjust the passenger and checked baggage masses in cases where significant numbers of passengers or quantities of baggage are suspected of exceeding the standard values. This requirement implies that the Operations Manual should contain appropriate directives to ensure that:

   a. Check-in, operations and cabin staff and loading personnel report or take appropriate action when a flight is identified as carrying a significant number of passengers whose masses, including hand baggage, are expected to exceed the standard passenger mass, and/or groups of passengers carrying exceptionally heavy baggage (e.g. military personnel or sports teams); and

   b. On small helicopters, where the risks of overload and/or CG errors are the greatest, commanders pay special attention to the load and its distribution and make proper adjustments.

AMC Appendix 1 to OPS 3.625
Mass and Balance Documentation
See Appendix 1 to OPS 3.625

The CG position need not be mentioned on the mass and balance documentation if, for example, the load distribution is in accordance with a pre-calculated balance table or if it can be shown that for the planned operations a correct balance can be ensured, whatever the real load is.

AC/AMC K

INSTRUMENTS AND EQUIPMENT

AMC OPS 3.630
Instruments and Equipment - Approval and Installation
See OPS 3.630

1 For Instruments and Equipment required by OPS 3 Subpart K, “Approved” means that compliance with the applicable TSO design requirements and performance specifications, or equivalent, in force at the time of the equipment approval application, has been demonstrated. Where a TSO does not exist, the applicable airworthiness standards apply unless otherwise prescribed in OPS 3 Subpart M.

2 “Installed” means that the installation of Instruments and Equipment has been demonstrated to comply with the applicable airworthiness requirements of CS-27/CS-29, or the relevant code used for Type Certification, and any applicable requirement prescribed in OPS 3.

3 Instruments and Equipment approved in accordance with design requirements and performance specifications other than TSOs, before the applicability dates prescribed in OPS 3.001(b), are acceptable for use or installation on helicopters operated for the purpose of commercial air transportation provided that any additional OPS requirement is complied with.

4 When a new version of a TSO (or of a specification other than a TSO) is issued, Instruments and Equipment approved in accordance with earlier requirements may be used or installed on helicopters operated for the purpose of commercial air transportation provided that such Instruments and Equipment are operational, unless removal from service or withdrawal is required by means of an amendment to OPS 3 or Subpart M.

AMC OPS 3.647
Equipment for Operations Requiring a Radio Communication and/or Radio Navigation System
See OPS 3.647

A headset, as required by OPS 3.647, consists of a communication device which includes two earphones to receive and a microphone to transmit audio signals to the helicopter’s communication system. To comply with the minimum performance requirements, the earphones and microphone should match with the communication system’s characteristics and the flight deck environment. The headset should be adequately adjustable to fit the pilot’s head. Headset boom microphones should be of the noise cancelling type.

AMC OPS 3.650/3.652
Flight and Navigational Instruments and Associated Equipment
See OPS 3.650/3.652

1 Individual requirements of these paragraphs may be met by combinations of instruments or by integrated flight systems or by a combination of parameters on electronic displays provided that the information so available to each required pilot is not less than that provided by the instruments and associated equipment as specified in this Subpart.

2 The equipment requirements of these paragraphs may be met by alternative means of compliance when equivalent safety of the installation has been shown during type certification approval of the helicopter for the intended kind of operation.

AMC OPS 3.650/3.652
Flight and Navigational Instruments and Associated Equipment
See OPS 3.650/3.652

	FLIGHTS UNDER VFR		FLIGHTS UNDER IFR OR AT NIGHT	
INSTRUMENT	SINGLE PILOT	TWO PILOTS REQUIRED	SINGLE PILOT	TWO PILOTS REQUIRED
(a)	(b)	(c)	(d)	(e)
1 Magnetic Direction Indicator	1	1	1	1
2 Accurate Time Piece	1	1	1	1
3 OAT Indicator	1	1	1	1
4 Sensitive Pressure Altimeter	1	2	2 (Note 1)	2
5 Air Speed Indicator	1	2	1	2
6 Heated Pitot System	1 (Note 2)	2 (Note 2)	1	2
7 Pitot Heat Failure Annuciator	-	-	1 (Note 3)	2 (Note 3)
8 Vertical Speed Indicator	1	2	1	2
9 Slip Indicator	1	2	1	2
10 Attitude Indicator	1 (Note 4 or Note 5)	2 (Note 4 or Note 5)	1 (Note 8)	2 (Note 8)
11 Gyroscopic Direction Indicator	1 (Note 4 or Note 5)	2 (Note 4 or Note 5)	1 (Note 8)	2 (Note 8)
12 Magnetic Gyroscopic Direction Indicator	-	-	1 (Note 7)	2 (Note 7)
13 Standby Attitude Indicator	-	-	1 (Note 6)1	1 (Note 6)
14 Alternate Source of Static Pressure	-	-	1	1
15 Chart Holder	-	-	1 (Note 7)	1 (Note 7)

NOTE 1: For single pilot night VFR operation one sensitive pressure altimeter may be substituted by a radio altimeter (OPS 3.652(c)).

NOTE 2: Required for helicopters with a maximum certificated take-off mass (MCTOM) over 3175 kg or having a maximum approved passenger seating configuration (MAPSC) of more than 9 (OPS 3.650(l)).

NOTE 3: The pitot heater failure annunciation applies to any helicopter issued with an individual Certificate of Airworthiness after 1 August 1999. It also applies before that date when: the helicopter has a MCTOM greater than 3175 kg and a maximum approved passenger seating configuration (MAPSC) greater than 9 (OPS 3.652(d)).

NOTE 4: Required for helicopters with a maximum certificated take-off mass (MCTOM) over 3175 kg (OPS 3.650(i)).

NOTE 5: Required for any helicopters when operating over water; when out of sight of land or when the visibility is less than 1500 m (OPS 3.650(i)).

NOTE 6: For helicopters with a maximum certificated take-off mass (MCTOM) over 3175 kg, CS-29 1303(g) may require either a gyroscopic rate-of-turn indicator combined with a slip-skid indicator (turn and bank indicator) or a standby attitude indicator satisfying the requirements of OPS 3.652(h). (However, the original type certification standard should be referred to determine the exact requirement.)

NOTE 7: For IFR operation only

NOTE 8: For VFR night operations only.

AMC OPS 3.650(g) & 3.652(k)
Flight and Navigational Instruments and Associated Equipment
See OPS 3.650(g) & 3.652(k)

A means to indicate outside air temperature may be an air temperature indicator which provides indications that are convertible to outside air temperature.

AMC OPS 3.652(d) & (m)(2)
Flight and Navigational Instruments and Associated Equipment
See OPS 3.652(d) & (m)(2)

A combined pitot heater warning indicator is acceptable provided that a means exists to identify the failed heater in systems with two or more sensors.

AMC OPS 3.655
Procedures for Single Pilot Operation under IFR without an Autopilot.
See OPS 3.655

1 Operators approved to conduct single pilot IFR operations in a helicopter without altitude hold and heading mode, should establish procedures to provide equivalent safety levels. These procedures should include the following:

a. Appropriate training and checking additional to that contained in Appendix 1 to OPS 3.940(c).

b. Appropriate increments to the heliport operating minima contained in Appendix 1 to OPS 3.430.

2 Any sector of the flight which is to be conducted in IMC should not be planned to exceed 45 minutes.

AMC OPS 3.690(b)(6)
Crew Member Interphone System
See OPS 3.690(b)(6)

1 The means of determining whether or not an interphone call is a normal or an emergency call may be one or a combination of the following:

a. Lights of different colours;

b. Codes defined by the operator (e.g. Different number of rings for normal and emergency calls);

c. Any other indicating signal acceptable to the Authority.

AMC OPS 3.745
First-Aid Kits
See OPS 3.745

The following provides guidance on typical contents of a first-aid kit for carriage aboard a helicopter:

— List of contents
— Antiseptic swabs (10/pack)
— Bandage: adhesive strips
— Bandage: gauze 7.5 cm × 4.5 m
— Bandage: triangular; safety pins
— Dressing: burn 10 cm × 10 cm
— Dressing: compress, sterile 7.5 cm × 12 cm
— Dressing: gauze, sterile 10.4 cm × 10.4 cm
— Tape: adhesive 2.5 cm (roll)
— Steri-strips (or equivalent adhesive strip)
— Hand cleanser or cleansing towelettes
— Pad with shield, or tape, for eye
— Scissors: 10 cm (if allowed by national regulations)
— Tape: Adhesive, surgical 1.2 cm × 4.6 m
— Tweezers: splinter
— Disposable gloves (multiple pairs)

— Thermometers (non-mercury)
— Mouth-to-mouth resuscitation mask with one-way valve
— First-aid manual, current edition
— Incident record form

The following suggested medications can be included in the first-aid kits where permitted by national regulations:

— Mild to moderate analgesic
— Antiemetic
— Nasal decongestant
— Antacid
— Antihistamine

A universal precaution kit should be carried on a helicopter that is required to operate with at least one cabin crew member. Such a kit may be used to clean up any potentially infectious body contents such as blood, urine, vomit and faeces and to protect the cabin crew who are assisting potentially infectious cases of suspected communicable disease. Typical contents are;

— Dry powder that can convert small liquid spill into a sterile granulated gel
— Germicidal disinfectant for surface cleaning
— Skin wipes
— Face/eye mask (separate or combined)
— Gloves (disposable)
— Protective apron
— Large absorbent towel
— Pick-up scoop with scraper
— Bio-hazard disposal waste bag
— Instructions

AMC OPS 3.790
Hand Fire Extinguishers
See OPS 3.790

1 The number and location of hand fire extinguishers should be such as to provide adequate availability for use, account being taken of the number and size of the passenger compartments, the need to minimise the hazard of toxic gas concentrations and the location of toilets, galleys etc. These considerations may result in the number being greater than the minimum prescribed.

2 There should be at least one fire extinguisher suitable for both flammable fluid and electrical equipment fires installed on the flight deck. Additional extinguishers may be required for the protection of other compartments accessible to the crew in flight. Dry chemical fire extinguishers should not be used on the flight deck, or in any compartment not separated by a partition from the flight deck, because of the adverse effect on vision during discharge and, if non-conductive, interference with electrical contacts by the chemical residues.

3 Where only one hand fire extinguisher is required in the passenger compartments it should be located near the cabin crew member's station, where provided.

4 Where two or more hand fire extinguishers are required in the passenger compartments and their location is not otherwise dictated by consideration of paragraph 1 above, an extinguisher should be located near each end of the cabin with the remainder distributed throughout the cabin as evenly as is practicable.

5 Unless an extinguisher is clearly visible, its location should be indicated by a placard or sign. Appropriate symbols may be used to supplement such a placard or sign.

Note: Information concerning extinguishing agents is contained in the UNEP Halons Technical Options Committee Technical Note No. 1 – New Technology Halon Alternatives and FAA Report No. DOT/FAA/AR-99-63, Options to the Use of Halons for Aircraft Fire Suppression Systems.

AMC OPS 3.810
Megaphones
See OPS 3.810

Where one megaphone is required, it should be readily accessible from a cabin crew member's assigned seat. Where two or more megaphones are required, they should be suitably distributed in the passenger cabin(s) and readily accessible to crew members assigned to direct emergency evacuations. This does not necessarily require megaphones to be positioned such that they can be reached by a crew member when strapped in a cabin crew member's seat.

AMC OPS 3.820
Automatic Emergency Locator Transmitter
See OPS 3.820

1 Types of automatic Emergency Locator Transmitters are defined as follows:

a. Automatic Fixed (ELT (AF)). This type of ELT is intended to be permanently attached to the helicopter before and after a crash and is designed to aid SAR teams in locating a crash site;

b. Automatic Portable (ELT (AP)). This type of ELT is intended to be rigidly attached to the helicopter before a crash, but readily removable from the helicopter after a crash. It functions as an ELT during the crash sequence. If the ELT does not employ an integral antenna, the aircraft-mounted antenna may be disconnected and an auxiliary antenna (stored on the ELT case) attached to the ELT. The ELT can be tethered to a survivor or a life-raft. This type of ELT is intended to aid SAR teams in locating the crash site or survivor(s);

c. Automatic Deployable (ELT (AD)). This type of ELT is intended to be rigidly attached to the helicopter before the crash and automatically ejected and deployed after the crash sensor has determined that a crash has occurred. This type of ELT should float in water and is intended to aid SAR teams in locating the crash site.

2 To minimise the possibility of damage in the event of crash impact, the Automatic Emergency Locator Transmitter should be rigidly fixed to the helicopter structure as far aft as practicable with its antenna and connections so arranged as to maximise the probability of the signal being radiated after a crash.

AMC OPS 3.825
Life Jackets
See OPS 3.825

For the purpose of OPS 3.825, seat cushions are not considered to be flotation devices.

AMC OPS 3.827
Crew Survival Suits – Estimating Survival Time
See OPS 3.827

1 Introduction

1.1 A person accidentally immersed in cold seas (typically offshore Northern Europe) will have a better chance of survival if he is wearing an effective survival suit in addition to a life-jacket. By wearing the survival suit, he can slow down the rate which his body temperature falls and protect himself from the greater risk of drowning brought about by incapacitation due to hypothermia.

1.2 The complete survival suit system – suit, life-jacket and clothes worn under the suit – should be able to keep the wearer alive long enough for the rescue services to find and recover him. In practice the limit is about 3 hours. If a group of persons in the water cannot be rescued within this time they are likely to have become so scattered and separated that location will be extremely difficult, especially in the rough water typical of Northern European sea areas. If it is expected that in water protection is required for periods greater than 3 hours, improvements should be sought in the search and rescue procedures rather than in the immersion suit protection.

2 Survival times

2.1 The aim must be to ensure that a man in the water can survive long enough to be rescued, i.e. his survival time must be greater than the likely rescue time. The factors affecting both times are shown in Figure 1. The figure emphasises that survival time is influenced by many factors, physical and human. Some of the factors are relevant to survival in cold water, some are relevant in water at any temperature.

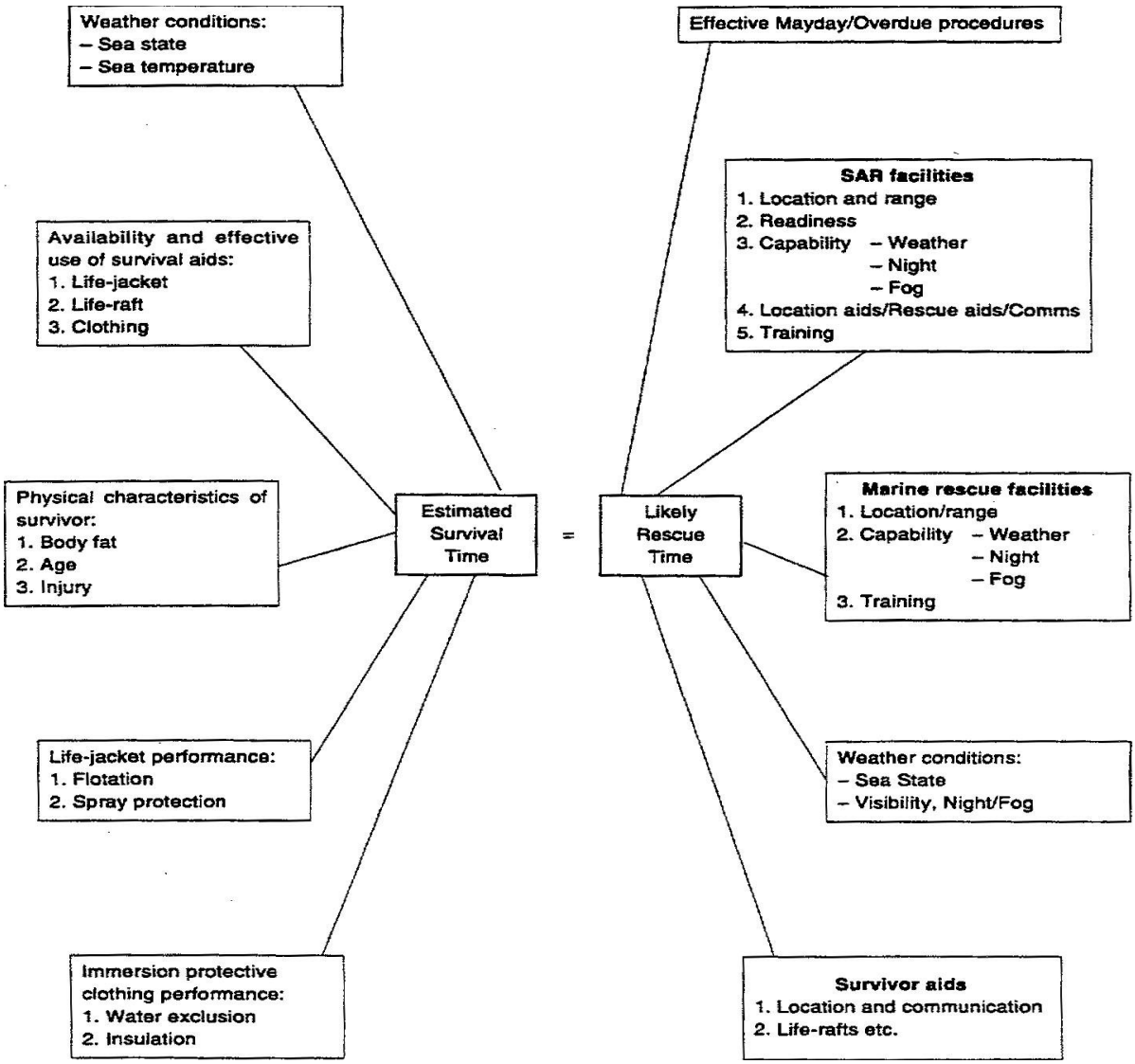


Fig. 1 The Survival Equation

2.2 Broad estimates of likely survival times for the thin offshore individual are given in Fig. 2. As survival time is significantly affected by the prevailing weather conditions at the time of immersion, the Beaufort wind scale has been used as an indicator of these surface conditions.

Clothing assembly	Beaufort wind force	Times within which the most vulnerable individuals are likely to drown	
		(water temp 5°c)	(water temp 13°c)
Working clothes (no immersion suit)	0 – 2	Within ¾ hour	Within 1 ¼ hours
	3 – 4	Within ½ hour	Within ½ hour
	5 and above	Significantly less than ½ hour	Significantly less than ½ hour
Immersion suit worn over working clothes (with leakage inside suit)	0 -2	May well exceed 3 hours	May well exceed 3 hours
	3 – 4	Within 2 ¾ hours	May well exceed 3 hours
	5 and above	Significantly less than 2 ¾ hours. May well exceed 1 hour	May well exceed 3 hours

2.3 Consideration must also be given to escaping from the helicopter itself should it submerge or invert in the water. In this case escape time is limited to the length of time the occupants can hold their breath. The breath hold time can be greatly reduced by the effect of cold shock. Cold shock is caused by the sudden drop in skin temperature on immersion, and is characterised by a gasp reflex and uncontrolled breathing.

The urge to breathe rapidly becomes overwhelming and, if still submerged, the individual will inhale water resulting in drowning. Delaying the onset of cold shock by wearing an immersion suit will extend the available escape time from a submerged helicopter.

2.4 The effects of water leakage and hydrostatic compression on the insulation quality of clothing are well recognised. In a nominally dry system the insulation is provided by still air trapped within the clothing fibres and between the layers of suit and clothes. It has been observed that many systems lose some of their insulative capacity either because the clothes under the 'waterproof' survival suit get wet to some extent or because of hydrostatic compression of the whole assembly. As a result of water leakage and compression, survival times will be shortened. The wearing of warm clothing under the suit is recommended.

2.5 Whatever type of survival suit and other clothing is provided, it should not be forgotten that significant heat loss can occur from the head.

AMC OPS 3.830(a)(2)
Life-rafts and ELT for Extended Overwater Flights
See OPS 3.830(a)(2)

1 Each life-raft required by OPS 3.830 shall conform to the following specification:

a. They shall be of an approved design and stowed so as to facilitate their ready use in an emergency;

b. They shall be radar conspicuous to standard airborne radar equipment;

c. When carrying more than one life-raft on board, at least 50% shall be jettisonable by the crew while seated at their normal station, where necessary by remote control;

d. Those life-rafts which are not jettisonable by remote control or by the crew shall be of such weight as to permit handling by one person. 40 kg shall be considered a maximum weight.

2 Each life-raft required by OPS 3.830 shall contain at least the following:

a. One approved survivor locator light;

b. One approved visual signalling device;

c. One canopy (for use as a sail, sunshade or rain catcher;

d. One radar reflector;

e. One 20 m retaining line designed to hold the life-raft near the helicopter but to release it if the helicopter becomes totally submerged;

f. One sea anchor;

g. One survival kit, appropriately equipped for the route to be flown, which shall contain at least the following:

i. One life-raft repair kit;

ii. One bailing bucket;

iii. One signalling mirror;

iv. One police whistle;

v. One buoyant raft knife;

vi. One supplementary means of inflation;

vii. Seasickness tablets;

viii. One first-aid kit;

ix. One portable means of illumination;

x. One half litre of pure water and one sea water desalting kit;

xi. One comprehensive illustrated survival booklet in an appropriate language.

3 Batteries used in the ELTs should be replaced (or recharged, if the battery is rechargeable) when the equipment has been in use for more than 1 cumulative hour, and also when 50% of their useful life (or for rechargeable, 50% of their useful life of charge), as established by the equipment manufacturer has expired. The new expiration date for the replacement (or recharged) battery must be legibly marked on the outside of the equipment. The battery useful life (or useful life of charge) requirements of this paragraph do not apply to batteries (such as water-activated batteries) that are essentially unaffected during probable storage intervals.

AMC OPS 3.830(a)(3)
Survival Emergency Locator Transmitter (ELT(S))
See OPS 3.830(a)(3)

1 A survival ELT (ELT(S)) is intended to be removed from the helicopter and activated by survivors of a crash. An ELT(S) should be stowed so as to facilitate its ready removal and use in an emergency. An ELT(S) may be activated manually or automatically (e.g. by water activation). It should be designed to be tethered to a life raft or a survivor.

AMC OPS 3.835
Survival Equipment
See OPS 3.835

1 The expression 'Areas in which search and rescue would be especially difficult' should be interpreted in the context of this OPS 3 as meaning:

a. Areas so designated by the State responsible for managing search and rescue; or

b. Areas that are largely uninhabited and where:

i. The State responsible for managing search and rescue has not published any information to confirm that search and rescue would not be especially difficult; and

ii. The State referred to in (a) above does not, as a matter of policy, designate areas as being especially difficult for search and rescue.

AMC OPS 3.835(c)
Survival Equipment
See OPS 3.835(c)

1 The following additional survival equipment should be carried when required:

a. 500 ml of water for each 4, or fraction of 4, persons on board;

b. One knife;

c. First Aid Equipment;

d. One set of Air/Ground codes;

In addition, when polar conditions are expected, the following should be carried:

e. A means for melting snow;

f. 1 snow shovel and 1 ice saw;

g. Sleeping bags for use by $^1/_3$ of all persons on board and space blankets for the remainder or space blankets for all passengers on board;

h. 1 Arctic/Polar suit for each crew member carried.

2 If any item of equipment contained in the above list is already carried on board the helicopter in accordance with another requirement, there is no need for this to be duplicated.

AMC OPS 3.837(a)(2)
Additional Requirements for Helicopters Operating to Helidecks located in a Hostile Sea Area
See OPS 3.837

1 Operators should be aware that projections on the exterior surface of the helicopter, which are located in a zone delineated by boundaries which are 1.22 m (4 ft) above and 0.61 m (2 ft) below the established static water line could cause damage to a deployed life raft. Examples of projections which need to be considered are aerials, overboard vents, unprotected split pin tails, guttering and any projection sharper than a three dimensional right angled corner.

2 While the boundaries specified in para 1 above are intended as a guide, the total area which should be considered should also take into account the likely behaviour of the life raft after deployment in all sea states up to the maximum in which the helicopter is capable of remaining upright.

3 Operators and maintenance organisations are reminded that wherever a modification or alteration is made to a helicopter within the boundaries specified, the need to prevent the modification or alteration causing damage to a deployed life raft should be taken into account in the design.

4 Particular care should also be taken during routine maintenance to ensure that additional hazards are not introduced by, for example, leaving inspection panels with sharp corners proud of the surrounding fuselage surface, or allowing door sills to deteriorate to a point where sharp edges become a hazard.

5 The same considerations apply in respect of emergency flotation equipment.

AMC OPS 3.843(c)
Flights Overwater - Performance Class 2 Take-off and Landing
See OPS 3.843(c)

When helicopters are operated in Performance Class 2 and are taking-off or landing over water, they are exposed to a critical power unit failure. They should therefore be designed for landing on water, certificated in accordance with ditching provisions, or have the appropriate floats fitted (for a non-hostile environment).

AC/AMC L

COMMUNICATION AND NAVIGATION EQUIPMENT

AMC OPS 3.845
Communication and Navigation Equipment - Approval and Installation
See OPS 3.845

1 For Communication and Navigation Equipment required by OPS 3 Subpart L, “Approved” means that compliance with the applicable TSO design requirements and performance specifications, or equivalent, in force at the time of the equipment approval application, has been demonstrated. Where a TSO does not exist, the applicable airworthiness standards or equivalent apply unless otherwise prescribed in OPS 3 Subpart M.

2 “Installed” means that the installation of Communication and Navigation Equipment has been demonstrated to comply with the applicable airworthiness requirements of CS-27/CS-29, or the relevant code used for Type Certification, and any applicable requirement prescribed in OPS 3.

3 Communication and Navigation Equipment approved in accordance with design requirements and performance specifications other than TSOs, before the applicability dates prescribed in OPS 3.001(b), are acceptable for use or installation on helicopters operated for the purpose of commercial air transportation provided that any additional OPS requirement is complied with.

4 When a new version of a TSO (or of a specification other than a TSO) is issued, Communication and Navigation Equipment approved in accordance with earlier requirements may be used or installed on helicopters operated for the purpose of commercial air transportation provided that such Communication and Navigation Equipment are operational, unless removal from service or withdrawal is required by means of an amendment to OPS 3 or Subpart M. The same provisions apply in the case where an existing TSO (or a specification) is superseded by a new TSO (or a new specification).

AC OPS 3.865(e)
FM Immunity Equipment Standards
See OPS 3.865(e)

1 FM immunity performance Standards for ILS Localiser, VOR receivers and VHF communication receivers have been incorporated in ICAO Annex 10, Volume I - Radio Navigation Aids Fifth Edition dated July 1996, Chapter 3, Paragraphs 3.1.4, 3.3.8 and Volume III, Part II - Voice Communications Systems, Paragraph 2.3.3.

2 Acceptable equipment standards, consistent with ICAO Annex 10, are contained in EUROCAE Minimum Operational Performance Specifications, documents ED-22B for VOR receivers, ED-23B for VHF communication receivers and ED-46B for LOC receivers and the corresponding RTCA documents DO-186, DO-195 and DO-196.

AMC M

HELICOPTER CONTINUING AIRWORTHINESS

AMC OPS 3.875
General
See OPS 3.875

1. Reference to CAR 145 does not include the components fitted to or intended to be fitted to the helicopter. Reference should be made to CAP 02 for the certification and acceptance of components.

2. The performance of de-icing and anti-icing activities does not require a CAR 145 approval.

3. Reference should be made to CAR GEN 010(b) for the regulation concerning the maintenance release from an approved organisation considered equivalent to a CAR 145 approved organisation

4. Before an aircraft registered in San Marino may fly it must be issued with a certificate certifying that all required maintenance has been completed in accordance with the requirements of the Authority.

   This certification is known as a Certificate of Release to Service (CRS) and it can only be issued by persons approved directly or indirectly by the Authority. Unless notified to the contrary, the Authority will accept the release to service certification of an approved maintenance organisation defined in CAR GEN.010(a).

5. The conditions for the certification of a release to service are defined in CAR GEN Subpart C.

AMC OPS 3.885(a)
Application for and Approval of the Operator's Maintenance System
See OPS 3.885(a)

1. The Authority does not expect the documents listed in OPS 3.185(b) to be submitted in a completed state with the initial application for grant or variation since each will require approval in its own right and may be subject to amendment as a result of Authority assessment during the technical investigations. Draft documents should be submitted at the earliest opportunity so that investigation of the application can begin. Grant or variation cannot be achieved until the Authority is in possession of completed documents.

2. This information is required to enable the Authority to conduct its investigation into the application, to assess the volume and complexity of work proposed and the locations at which it will be accomplished.

3. The applicant should inform the Authority where base and scheduled line maintenance is to take place and give details of any contracted maintenance which is in addition to that provided in response to OPS 3.895(a) or (c).
4. At the time of application, the operator should have arrangements for all base and scheduled line maintenance in place for an appropriate period of time, as acceptable to the Authority. The operator should establish further arrangements in due course before the maintenance is due. Base maintenance contracts for high-life time checks may be based on one time contracts, when the Authority considers that this is compatible with the operator's fleet size.

AMC OPS 3.885(b)
Application for and Approval of the Operator's Maintenance System
See OPS 3.885(b)

1. The approval of the operator's maintenance system will be indicated by means of a statement containing the following information:

   a. Air Operator Certificate number;

   b. Name of the operator;

   c. Type(s) of helicopter for which the maintenance system has been accepted;

d. Reference identification of the operator's approved helicopter maintenance programme(s) related to c. above;

e. Reference identification of the operator's approved maintenance management exposition; and

f. Any limitations imposed by the Authority on the grant or variation.

Note: Approval may be limited to specified helicopters, to specific locations or by other means like operational limitations if considered necessary by the Authority in the interests of safe operation.

AMC OPS 3.890(a)
Maintenance Responsibility
See OPS 3.890(a

1. The requirement means that the operator is responsible for determining what maintenance is required, when it has to be performed and by whom and to what standard, in order to ensure the continued airworthiness of the aircraft being operated.

2. The operator should therefore have adequate knowledge of the design status (type-specification, customer options, airworthiness directives, modifications, operational equipment) and required and performed maintenance. Status of helicopter design and maintenance should be adequately documented to support the performance of the Quality System (See OPS 3.900).

3. The operator should establish adequate co-ordination between flight operations and maintenance to ensure that both will receive all information on the condition of the aircraft necessary to enable both to perform their tasks.

4. The requirement does not mean that an operator himself performs the maintenance (this is to be done by a CAR 145 Approved/Accepted Maintenance Organisation (See OPS 3.895) but that the operator carries the responsibility for the airworthy condition of aircraft it operates and thus should be satisfied before the intended flight that all required maintenance has been properly carried out.

5. When an operator is not appropriately approved in accordance with CAR 145, the operator should provide a clear work order to the maintenance contractor. The fact that an operator has contracted a CAR 145 Approved/Accepted Maintenance Organisation should not prevent him from checking at the maintenance facilities on any aspect of the contracted work if he wishes to do so to satisfy his responsibility for the airworthiness of the aircraft.

AMC OPS 3.890(a)(1)
Maintenance Responsibility
See OPS 3.890(a)(1)

1. With regard to the pre-flight inspection it is intended to mean all of the actions necessary to ensure that the helicopter is fit to make the intended flight. These should typically include but are not necessarily limited to:

   a. A walk-around type of inspection of the helicopter and its emergency equipment for condition including, in particular, any obvious signs of wear, damage or leakage.

   b. Inspection of the technical log to ensure that the intended flight is not adversely affected by any outstanding deferred defects and that no required maintenance action shown in the maintenance statement is overdue or will become due during the flight.

   c. That consumable fluids, gases etc. uplifted prior to flight are of the correct specification, free from contamination, and correctly recorded.

   d. That all doors are securely fastened.

   e. Control surface and landing gear locks, pitot/static covers, restraint devices and engine/aperture blanks have been removed.

   f. That all the helicopter's external surfaces and engines are free from ice, snow, sand, dust etc.

2. Tasks such as oil and hydraulic fluid uplift and tyre inflation may be considered as part of the pre-flight inspection, if acceptable to the Authority. The related pre-flight inspection instructions should address the procedures to determine where the necessary uplift or inflation results from an abnormal consumption and possibly requires additional maintenance action by the CAR 145 approved/accepted Maintenance Organisation.

3. The operator should publish guidance to maintenance and flight personnel and any other personnel performing pre-flight inspection tasks, as appropriate, defining responsibilities for these actions and, where tasks are contracted to other organisations, how their accomplishment is subject to the Quality System of OPS 3.900. It should be demonstrated to the Authority that pre-flight inspection personnel have received appropriate training for the relevant pre-flight inspections tasks. The training standard for personnel performing the pre-flight inspection should be described in the operator's maintenance management exposition.

AMC OPS 3 890(a)(1)
Maintenance Responsibility
See OPS 3.890(a)(1)

The fact that the performance of pre-flight inspections is the operator's maintenance responsibility does not necessarily means that such personnel performing pre-flight inspection tasks report to the nominated postholder for continuing airworthiness, but that the nominated postholder for continuing airworthiness is responsible for determining the content of the pre-flight inspection and setting the qualification standard of the involved personnel. In addition, compliance with the qualification standard should be monitored by the operator's Quality System.

AMC OPS 3.890(a)(2)
Maintenance Responsibility
See OPS 3.890(a)(2)

The operator should have a system to ensure that all defects affecting the safe operation of the helicopter are rectified within the limits prescribed by the approved MEL or CDL as appropriate and that no postponement of such a defect rectification beyond the approved limits can be permitted unless with the operator's agreement and in accordance with a procedure approved by the Authority.

AMC OPS 3.890(a)(3)
Maintenance Responsibility
See OPS 3.890(a)(3)

The operator should have a system to ensure that all helicopter maintenance checks are performed within the limits prescribed by the approved helicopter maintenance programme and that, whenever a maintenance check cannot be performed within the required time limit, its postponement is allowed with the operator's agreement and in accordance with a procedure approved by the Authority.

AMC OPS 3.890(a)(4)
Maintenance Responsibility
See OPS 3.890(a)(4)

The operator should have a system to analyse the effectiveness of the maintenance programme, with regard to spares, established defects, malfunctions and damage, and to amend the maintenance programme accordingly (this amendment will involve the approval of the Authority unless the operator has been approved to amend the maintenance programme without direct involvement of the Authority).

AMC OPS 3.890(a)(5)
Maintenance Responsibility
See OPS 3.890(a)(5)

"Any other continued airworthiness requirement made mandatory by the Authority" includes Type Certification related requirements such as: Certification Maintenance Requirements (CMR's), Life Limited Parts, Airworthiness Limitations, etc. For the purposes of this statement, "made mandatory by the Authority" refers to those mandatory requirements, such as airworthiness directives (ADs) prescribed for that aircraft or product by the State of type certification on which the Type Acceptance Certificate refers.

The Authority may from time to time issue an Additional Airworthiness Directive (AAD) to address an urgent safety concern and may additionally vary the requirements of a State of type acceptance AD. In this case the AAD will take precedence.

AMC OPS 3.890(a)(6)
Maintenance Responsibility
See OPS 3.890(a)(6)

Repairs or modifications of any part of the aircraft, or of its equipment, should be carried out in accordance with the Type Certificate holder, Supplemental Type Certificate holder instructions or those instructions provided as part of an approval under CAR 21 Subpart C.

Modification and repair data provided by the Type Certificate holder or Supplemental Type Certificate holder will be acceptable without further showing.

Modification and repair data approved in accordance with the regulations of the State of type acceptance of the product (Aircraft, Engine or Rotor) will be acceptable.

Modification and repair data approved in accordance with CAR 21 Subpart C regulations are acceptable to the Authority.

In addition the operator should establish a policy to asses non-mandatory information relevant to the airworthiness of the aircraft operated. This includes Service Bulletins, Service Letters and may include other information published by the aircraft, engine and component type design organisations or related airworthiness authorities.

AMC OPS 3.895(a)
Maintenance Management
See OPS 3.895(a)

1. Where the operator is not itself approved to CAR 145 or the operator's maintenance organisation is a different legal entity, a contract should be agreed between the operator and the CAR 145 Approved Maintenance Organisation that specifies, in detail, the work to be performed by the CAR 145 Approved Maintenance Organisation.

2. In any contract, both the specification of work and the assignment of responsibilities should be clear, unambiguous and sufficiently detailed to ensure that no misunderstanding should arise between the parties concerned (operator, maintenance organisation and the Authority) that could result in a situation where work that has a bearing on the airworthiness or serviceability of aircraft is not or will not be properly performed.

   Example of Contract Contents

   The following paragraphs are not intended to provide a standard maintenance contract but to provide a list of the main points that should be addressed, where applicable, in a maintenance contract between an operator and a CAR 145 approved or accepted maintenance organisation. As only the technical parts of the maintenance contracts must be acceptable to the CAA, the following paragraphs only address technical matters and exclude matters such as costs, delay, warranty, etc.

   When maintenance is contracted to more than one CAR 145 approved organisation (for example aircraft base maintenance to X, engine maintenance to Y and line maintenance to Z1, Z2 & Z3), attention should be paid to the consistency of the different maintenance contracts.

   A maintenance contract is not normally intended to provide appropriate detailed work instruction to the personnel (and is not normally distributed as such). Accordingly, there should be established organisational responsibility, procedures and routines in the operator's Maintenance Management Exposition (MME) and the CAR 145 organisations Maintenance Organisation Exposition (MOE) to take care of these functions in a satisfactory way such that any person involved is informed about his/her responsibility and the procedures which apply. These procedures and routines can be included/appended to the operator's MME and maintenance organisation's MOE or consist in separate procedures. In other words, procedures and routines should reflect the conditions of the contract.

   a. Aircraft/Engine Maintenance

The following subparagraphs may be adapted to include in a maintenance contract that applies to aircraft base maintenance, aircraft line maintenance and engine maintenance.

Aircraft maintenance also includes the maintenance of the engines while they are installed on the aircraft.

b. Scope of Work

The type of maintenance to be performed by the CAR 145 approved organisation should be clearly specified. In the case of line and/or base maintenance, the contract should specify the aircraft type, engines and, preferably include the aircraft's registrations. In the case of engine maintenance performed off-wing, the contract should specify the engine type.

c. Locations Identified for the Performance of Maintenance

The place(s) where base, line or engine maintenance, as applicable, will be performed should be specified. The approval certificate held by the maintenance organisation at the place(s) where the maintenance will be performed should be referred to in the contract. If necessary the contract may address the possibility of performing maintenance at any location subject to the need for such maintenance arising either from the unserviceability of the aircraft or from the necessity of supporting occasional line maintenance.

d. Sub-Contracting

The maintenance contract should specify under which conditions the CAR 145 approved organisation may sub-contract tasks to a third party (whether this third party is CAR 145 approved/accepted or not). The contract as a minimum should make reference to CAR 145.125(2). In addition, the operator may require the CAR 145 approved organisation to obtain the operator's approval before subcontracting to a third party. Access should be given to the operator regarding any information (especially the quality monitoring information) about the CAR 145 approved organisation's subcontractors involved in the contract. It should however be noted that under the operator's responsibility both the operator and the CAA are entitled to be fully informed about subcontracting, although the CAA will normally only be concerned with aircraft, engine and APU subcontracting

e. Maintenance Programme

The maintenance programme under which the maintenance is to be performed must be specified.

f. Quality Monitoring

The terms of the contract should include a provision allowing the operator to perform quality surveillance (including audits) upon the CAR 145 approved organisation. The maintenance contract should specify how the results of the quality surveillance/audits are considered by the CAR 145 approved organisation (See also paragraph 2.w.v). – 'Meetings').

g Airworthiness Data

The airworthiness data used for the purpose of this contract should be specified. This may include, but not limited to:

- Maintenance Programme
- Airworthiness Directive
- Major repairs/modification data
- Aircraft Maintenance Manual
- Component Maintenance Manuals, e.g. galley, seats, equipment etc
- Aircraft and equipment IPCs
- Wiring Diagrams

- Trouble Shooting Manual
- Minimum Equipment List
- Operations Manual
- Flight Manual
- Engine Maintenance Manual
- Engine Overhaul Manual
- Maintenance Management Exposition

h. Incoming Conditions

The contract should specify in which condition the operator should send the aircraft to the CAR 145 approved organisation. For checks of significance e.g. 'C' checks and above, it may be beneficial that a work scope planning meeting be organised so that the tasks to be performed may be commonly agreed (see also paragraph 2.w.ii) -: 'Meetings').

i. Airworthiness Directives and Service Bulletins

The contract should specify what information the operator is responsible to provide to the CAR 145 approved organisation, such as the due date of the airworthiness directives (ADs), the selected means of compliance, the decision to embody Service Bulletins (SBs) or modification, etc. In addition, the type of information the operator will need in return to complete the control of ADs and modification status should be specified.

j. Hours and Cycle Control

Hours and cycles control is the responsibility of the operator, but there may be cases where the CAR-145 approved organisation should receive the current flight hours and cycles on a regular basis so that it may update the records for its own planning functions (see also paragraph v. - 'Exchange of information').

k. Service Life Limited Components

Service life-limited components control is the responsibility of the operator. The CAR 145 approved organisation will have to provide the operator with all the necessary information about the service life-limited components removal/installation so that the operator may update its records (see also paragraph v. - 'Exchange of Information')

l. Supply of Parts

The contract should specify whether a particular type of material or component is supplied by the operator or by the contracted CAR 145 accepted/approved organisation, which type of component is pooled, etc. The contract should clearly state that it is the contracted maintenance provider's responsibility to be satisfied that the component in question meets the approved data/standard and to ensure that the aircraft component is in a satisfactory condition for installation. A contracted maintenance organisation cannot simply accept whatever is supplied by the operator. Additional guidance is provided in CAP 02 for the acceptance of components and this should be reflected in the contract.

m. Pooled Parts

If applicable, the contract should specify how the subject of pooled parts at Line Stations are addressed.

n. Scheduled Maintenance

For the planning scheduled maintenance checks, the support documentation to be given to the CAR 145 approved organisation should be specified. This may include, but may not be limited to:

- Applicable work package, including work/task cards
- Scheduled component removal list
- Modifications to be incorporated
- Service Bulletin and special maintenance requests

When the CAR 145 approved organisation determines, for any reason, to defer a maintenance task, it must be formally agreed with the operator. If the deferment goes beyond an approved limit, refer to paragraph q - 'Deviation from the Maintenance Programme'. This should be addressed, where applicable, in the maintenance contract.

o. Unscheduled Maintenance/Defect Rectification

The contract should specify to which level the CAR 145 approved organisation may rectify a defect without reference to the operator. As a minimum, the approval and incorporation of major repairs should be addressed. The deferment of any defect rectification should be submitted to the operator and, if applicable, to the CAA.

p. Deferred Tasks

See paragraphs n. and o. above. In addition, for aircraft line and base maintenance the use of the operator's MEL and the relation with the operator in case of a defect that cannot be rectified at the line station should be addressed.

q. Deviation from the Maintenance Programme

Deviations, or variations to the Maintenance Programme must be requested by the operator to the CAA or granted by the operator in accordance with a procedure acceptable to the CAA. The contract should specify the support the CAR 145 approved organisation may provide to the operator to substantiate the deviation or variation request.

r. Test Flight

If any test flight is required after aircraft maintenance, it should be performed in accordance with the procedures established in the operator's Maintenance Management Exposition.

s. Engine Testing

The contract should specify the acceptability criterion for engine testing and whether a representative of the operator should witness an engine undergoing test.

t. Release to Service Documentation

The release to service must be performed by the CAR145 approved/accepted organisation in accordance with its MOE procedures, CAR GEN Subpart C and the guidance contained in the applicable CAA Information Circular. The contract should, however, specify which support forms must be used (Operator's technical log, CAR 145 approved organisation's maintenance visit file, etc.) and the documentation the CAR 145 approved/accepted organisation should provide to the operator upon delivery of the aircraft.

This may include but not limited to:

- Certificate of Release to Service – mandatory
- Flight Test Report
- List of modifications embodied
- List of Service Bulletins embodied/satisfied
- List of repairs carried out

- List of Airworthiness Directives incorporated
- Maintenance visit report
- Bench test reports
- Release certifications for components fitted, e.g. EASA Form 1, FAA Form 8130-3

u. Continuing Airworthiness Records

The operator may contract the CAR 145 approved organisation to retain some of the continuing airworthiness records required by CAR OPS 3 Subpart M. It should be ensured that every requirement of CAR OPS 3.920 is fulfilled by either the operator or the CAR 145 approved organisation. In such a case, uninhibited and ready access to the above-mentioned records should be given by the CAR 145 approved organisation to the operator and the CAA.

v. Exchange of Information

Each time exchange of information between the operator and the CAR 145 approved organisation is necessary, the contract should specify what information should be provided and when (i.e. on what occasion or at what frequency), how, by whom and to whom it must be transmitted.

w. Meetings

For the CAA to be satisfied that a good communication system exists between the operator and the CAR 145 approved organisation, the terms of the maintenance contract should include the provision for a certain number of meetings to be held between both parties.

The contract should state that minutes will be taken, circulated to named persons and held on file by both organisations.

i) Contract Review

Before the contract is applicable and valid, it is important for the technical personnel of both parties that are involved in the application of the contract to meet in order to be sure that every point leads to a common understanding of the duties and responsibilities of both parties.

ii) Work Scope Planning Meeting

Work scope planning meetings may be organised so that the tasks to be performed are commonly agreed.

iii) Technical Meeting

Scheduled meetings may be organised in to review, on a regular basis, technical matters such as ADs, SBs, future modifications, major defects found during maintenance check, reliability, etc.

iv) Quality Meeting

Quality meetings may be organised to examine matters raised by the operator's quality surveillance and to agree upon necessary corrective actions.

v) Reliability Meeting

When a reliability programme exists, the contract should specify the operator's and CAR 145 approved organisation's respective involvement in that programme, including the participation in reliability meetings.

3. The Authority is required to find the contract(s) acceptable to them, and especially that the contract allows the operator to properly exercise its maintenance responsibility. Those parts of a contract that have no bearing on the technical or operational aspects of airworthiness are outside the scope of this paragraph.

AMC OPS 3.895(b)
Maintenance Management
See OPS 3.895(b)

1. The person or group of persons employed should represent the maintenance management structure of the operator (for maintenance) and be responsible for all maintenance and continuing airworthiness functions. Dependent on the size of the operation and the organisational set-up, the maintenance and continuing airworthiness functions may be divided under individual managers or combined in nearly any number of ways. This includes combining the functions of 'Accountable Manager' (see OPS 3.175(h)), the 'nominated postholder' (see OPS 3.175(i)) and the quality monitoring function (see OPS 3.900) so long as the quality monitoring function remains independent of the functions to be monitored. In the smallest organisation this may lead to the quality monitoring function being performed by the Accountable Manager if suitably qualified. Consequently the smallest organisation consists of at least two persons except that the Authority may agree to the quality monitoring function being sub-contracted to another operator's quality monitoring department or a suitably qualified independent person acceptable to the Authority.

2. The actual number of persons to be employed and their necessary qualifications is dependent upon the tasks to be performed and thus dependent on the size and complexity of the operation (route network, line or charter, number of aircraft and the aircraft types, complexity of the aircraft and their age), number and locations of maintenance facilities and the amount and complexity of maintenance contracting. Consequently, the number of persons needed, and their qualifications, may differ greatly from one operator to another and a simple formula covering the whole range of possibilities is not feasible.

3. To enable the Authority to accept the number of persons and their qualifications, the operator should make an analysis of the tasks to be performed, the way in which he intends to divide and/or combine these tasks, indicate how he intends to assign responsibilities and establish the number of man/hours and the qualifications needed to perform the tasks. With significant changes in the aspects relevant to the number and qualifications of persons needed, this analysis should be updated.

4. The authority does not necessarily expect that the credentials of each person of the Maintenance Management Group of Persons are individually submitted to the Authority for their acceptance. However, the manager of the Maintenance Management Group of Persons, and any manager reporting directly to him should be individually acceptable to the Authority**.**

AMC OPS 3.895(c)
Maintenance Management
See OPS 3.895(c)

This situation is normally only applicable to small operators of aircraft under 3175 kg maximum mass. The Authority should only accept that the proposed person be employed by the maintenance organisation when it is manifest that he/she is the only available competent person in a position to exercise this function, within a practical working distance from the operator's offices

AMC OPS 3.895(c)
Maintenance Management
See OPS 3.895(c)

This paragraph only applies to contracted maintenance and therefore does not affect situations where the CAR 145 approved/accepted organisation and the operator are the same organisation.

AMC OPS 3.895(d)
Maintenance Management
See OPS 3.895(d)

1. In the case of continuing airworthiness tasks, special attention should be paid to procedures and responsibilities to ensure that all maintenance work is performed, Service Bulletins are analysed and decisions taken on accomplishment, airworthiness directives are received, analysed, completed on time, recorded and that all work, including non-mandatory modifications is carried out to approved data and to the latest standards.

AMC OPS 3.895(e)
Maintenance Management
See OPS 3.895(e)

1. In the case of a contract with an organisation to carry out continuing airworthiness functions, the operator's maintenance management exposition should include appropriate procedures to ensure that all required maintenance is ultimately performed on time by CAR 145 approved/accepted Organisations in accordance with data acceptable to the Authority. In particular the Quality System procedures should place great emphasis on monitoring compliance with the above. The list of all contracted organisations, or a reference to this list, should be included in the operator's maintenance management exposition.

2. Such a maintenance arrangement does not absolve the operator from its overall Maintenance responsibility. Specifically, in order to accept the maintenance arrangement, the Authority should be satisfied that such an arrangement allows the operator to ensure full compliance with OPS 3.890 - Maintenance Responsibility.

AMC OPS 3.895(f & g)
Maintenance Management
See OPS 3.895(f & g)

The intent of this paragraph is that maintenance contracts are not necessary when the operator's maintenance system, as approved by the Authority, specifies that the relevant maintenance activity may be ordered through one time work orders. This includes for obvious reasons occasional line maintenance and may also include helicopter component maintenance up to engines, so long as the Authority considers that the maintenance is manageable through work orders, both in term of volume and complexity. It should be noted that this paragraph implies that even where base maintenance is ordered on a case by case basis, there must be a written maintenance contract.

AMC OPS 3.895(h)
Maintenance Management
See OPS 3.895(h)

Office accommodation in this case means office accommodation such that the incumbents, whether they are maintenance management, planning, technical records or quality staff, can carry out their designated tasks in a manner that contributes to good maintenance standards. In the smaller operators, the Authority may agree to these tasks being conducted from one office subject to being satisfied that there is sufficient space and that each task can be carried out without undue disturbance. Office accommodation should also include an adequate technical library and room for document consultation.

AMC OPS 3.900
Quality System
See OPS 3.900

1. The operator should establish a plan acceptable to the Authority to show when and how often the activities as required by OPS 3.890 will be monitored. In addition, a Quality Audit Plan must be provided and reports should be produced at the completion of each monitoring investigation and include details of discrepancies and non-compliance with procedures or requirements.

2. The feedback part of the system should address who is required to rectify discrepancies and non-compliance in each particular case and the procedure to be followed if rectification is not completed within appropriate timescales. The procedure should lead to the Accountable Manager specified in OPS 3.175(h).

3. To ensure effective compliance with OPS 3.900 the following elements have been shown to work well:

   a. Product sampling – the part inspection of a representative sample of the helicopter fleet;

   b. Defect sampling – the monitoring of defect rectification performance;

   c. Concession sampling – the monitoring of any concession to not carry out maintenance on time;

   d. On time maintenance sampling – the monitoring of when (flying hours/calendar time/flight cycles etc.) helicopters and their components are brought in for maintenance;

   e. Sampling reports of unairworthy conditions and maintenance errors.

   Note: OPS 3.900 includes other self-explanatory monitoring elements.

AMC OPS 3.900
Quality System
See OPS 3.900

The primary purpose of the Quality System is to monitor compliance with the approved procedures specified in the operator's Maintenance Management Exposition to ensure compliance with Subpart M and thereby ensure the maintenance aspects of the operational safety of the helicopters. In particular, this part of the Quality System provides a monitor of the effectiveness of maintenance, reference OPS 3.890, and should include a feedback system to ensure that corrective actions are both identified and carried out in a timely manner.

AMC OPS 3.905(a)
Maintenance Management Exposition
See OPS 3.905(a)
See Appendix 1 to AMC OPS 3.905(a)

1. The purpose of the maintenance management exposition is to set forth the procedures, means and methods of the operator. Compliance with its contents will assure compliance with OPS 3 Subpart M requirements and is a pre-requisite for obtaining an acceptance of the operator's maintenance system by the Authority.

2. Where the operator is appropriately approved as a CAR 145 approved maintenance organisation the exposition of the maintenance organisation may form the basis of the operator's maintenance management exposition in a combined document. Appendix 1 to AMC OPS 3.905(a) provides a suggested format and required contents.

3. Where the operator is not approved in accordance with CAR 145 but has a maintenance contract with a CAR 145 Approved Maintenance Organisation, Appendix 1 to AMC OPS 3.905(a**)** provides a suggested format and required contents for the maintenance management exposition.

4. Personnel are expected to be familiar with those parts of the exposition that are relevant to the maintenance and continuing airworthiness co-ordination work they carry out.

5. The operator will need to specify in the exposition who should amend the document, particularly where there are several parts.

6. The person responsible for the management of the Quality System should be responsible for monitoring and amending the exposition unless otherwise agreed by the Authority, including associated procedures manuals, and the submission of proposed amendments to the Authority for approval.

7. The operator may use Electronic Data Processing (EDP) for publication of the maintenance management exposition. The maintenance management exposition should be made available to the Authority in a form acceptable to the Authority. Attention should be paid to the compatibility of EDP publication systems with the necessary dissemination of the maintenance management exposition, both internally and externally.

8. Part 0 "General Organisation" of the maintenance management exposition should include a corporate commitment by the operator, signed by the Accountable Manager confirming that the maintenance management exposition and any associated manuals define the organisation compliance with OPS 3 Subpart M and will be complied with at all times.

9. The Accountable Manager's exposition statement should embrace the intent of the following paragraph and in fact this statement may be used without amendment. Any modification to the statement should not alter the intent:

   "This exposition defines the organisation and procedures upon which the Authority approval under OPS 3 Subpart M is based.

   These procedures are approved by the undersigned and must be complied with, as applicable, in order to ensure that all maintenance of .....*(quote operator's name)*..... fleet of aircraft is carried out on time to an approved standard.

   It is accepted that these procedures do not override the necessity of complying with any new or amended regulation published by the Authority from time to time where these new or amended regulations are in conflict with these procedures.

It is understood that the Authority will approve this organisation whilst the Authority is satisfied that the procedures are being followed and the work standard maintained. It is understood that the Authority reserves the right to suspend, vary or revoke the OPS Subpart M maintenance system approval of the organisation, as applicable, if the Authority has evidence that the procedures are not followed and the standards not upheld.

It is further understood that suspension or revocation of the approval of the maintenance system would invalidate the AOC.

Signed .....

Dated .....

Accountable Manager and ...*(quote position)*.....

For and on behalf of .....*(quote organisation's name)*..... "

10. Whenever the Accountable Manager is changed it is important to ensure that the new Accountable Manager signs the paragraph 9 statement at the earliest opportunity as part of the acceptance by the Authority.

Failure to carry out this action invalidates the CAR OPS 3 Subpart M approval.

Appendices 1 and 2 contain examples of exposition lay-outs.

AMC OPS 3.910(a)
Operator's Helicopter Maintenance Programme
See OPS 3.910(a)

1. The helicopter maintenance programme is the responsibility of the operator and therefore should be managed and presented by the operator to the Authority.

2. Where implementation of the content of an approved operator's helicopter maintenance programme is accomplished by an appropriately approved CAR 145 Approved Maintenance Organisation. The CAR 145 Approved Maintenance Organisation should have access to the relevant parts of the approved operator's helicopter maintenance programme. Implementation means preparation and planning of the maintenance tasks in accordance with the approved maintenance programme.

3. The helicopter should only be maintained to one approved operator's helicopter maintenance programme at a given point in time. Where the operator wishes to change from one approved operator's helicopter maintenance programme to another such approved maintenance programme, a transfer Check/Inspection may need to be performed, as agreed with the Authority, in order to implement the change.

4. The operator's helicopter maintenance programme should contain a preface which will define the maintenance programme contents, the inspection standards to be applied, permitted variations to task frequencies and, where applicable, any procedure to escalate established check/inspection intervals. Appendix 1 to AMC OPS 3.910(a) & (b) provides detailed guidance on the content of an approved operator's helicopter maintenance programme.

5. Where the operator wishes to use a helicopter with the initial operator's helicopter maintenance programme based upon the Maintenance Review Board Report (MRBR) process, any associated programme for the continuous surveillance of the reliability, or health monitoring of the helicopter should be considered as part of the helicopter maintenance programme.

6. Where an helicopter type has been subjected to the MRBR process, the Authority would normally require an operator to develop the initial operator's helicopter maintenance programme based upon the MRBR.

7. The documentation supporting the development of operator's helicopter maintenance programmes for helicopter types subjected to the MRBR process should contain identification cross reference to the MRBR tasks such that it is always possible to relate such tasks to the current approved operator's helicopter maintenance programme. This does not prevent the approved operator's helicopter maintenance programme from being developed in the light of service experience to beyond the MRBR recommendations but will show the relationship to such recommendations.

8. Some approved operator's helicopter maintenance programmes, not developed from the MRB Process, utilise reliability programmes. Such reliability programmes should be considered as a part of the approved maintenance programme.

9. Reliability programmes should be developed for helicopter maintenance programmes based upon MSG logic or those that include condition monitored components or that do not contain overhaul time periods for all significant system components.

10. Reliability programmes need not be developed for helicopter maintenance programmes of helicopters of 5700 kg and below or that do contain overhaul time periods for all significant system components.

11. The purpose of a reliability programme is to ensure that the helicopter maintenance programme tasks are effective and their periodicity is adequate. It therefore follows that the actions resulting from the reliability programme may be not only to escalate or delete maintenance task, but also to de-escalate or add maintenance tasks, as necessary.

12. A reliability programme provides an appropriate means of monitoring the effectiveness of the maintenance programme.

AMC OPS 3.910(f)
Operator's Helicopter Maintenance Programme
See OPS 3.910(f)

The operator should review the detailed requirements at least annually. A record of such reviews should be retained by the operator.

AMC OPS 3.910(g)
Operator's Helicopter Maintenance Programme
See OPS 3.910(g)

Notwithstanding AMC OPS 3.910(g) the operator is to review mandatory information before compliance is required. Such information includes but is not limited to:

a. Airworthiness Limitations include applicable mandatory replacement times of life limited parts, structural inspection intervals together with related structural inspection procedures.

b. Maintenance considerations such as Certification Maintenance Requirements/Certification Check Requirements) and applicable mandatory tasks intended to detect latent safety-significant failures.

AMC OPS 3.910(h)
Operator's Helicopter Maintenance
See OPS 3.910(h)

1. The documentation issued by the Authority to approve the operator's helicopter maintenance programme may include details of who may issue certificates of release to service in a particular situation and may define which tasks are considered as base maintenance activity. Development of the approved operator's helicopter maintenance programme is dependent upon sufficient satisfactory in-service experience which has been properly processed. In general, the task being considered for escalation beyond the MRB limits should have been satisfactorily repeated at the existing frequency several times before being proposed for escalation.

2. The Authority may approve a part of or an incomplete operator's helicopter maintenance programme at the start of operation of a new helicopter type or a new operator, subject to the limitation that the approved operator's helicopter maintenance programme is only valid for a period that does not exceed any required maintenance not yet approved. The following examples illustrate just two possibilities:

2.1 A new helicopter type may not have completed the acceptance process for structural inspection or corrosion control. It therefore follows that the operator's helicopter maintenance programme cannot be approved as a complete programme but it is reasonable to approve for a limited period, say, 3 000 flight hours or 1 year;

2.2 A new operator may not have established suitable maintenance arrangements for the high-life time checks. It therefore follows that the Authority may be unable to approve the complete operator's helicopter maintenance programme, preferring to opt for a limited period.

3. If the Authority is no longer satisfied that a safe operation can be maintained, the approval of the operator's helicopter maintenance programme or part of it may be suspended or revoked. Events giving rise to such action include:

3.1 The operator suspending the operation of that helicopter type for at least one year;

3.2 Periodic review of the approved operator's helicopter maintenance programme by the Authority shows that the operator has failed to ensure that the maintenance programme reflects the maintenance needs of the helicopter such that safe operation can be assured.

3.3 Excessive variations to the maintenance periods as defined in OPS 3.910(e) or where variations have been applied at times when the circumstances leading to the variations could have been reasonably foreseen by the operator.

AMC OPS 3.915
Operator's Helicopter Technical Log
See OPS 3.915

1. The operator's helicopter technical log is a system for recording defects and malfunctions discovered during the operation and for recording details of all maintenance carried out on the particular helicopter to which the operator's helicopter technical log applies whilst that helicopter is operating between scheduled visits to the base maintenance facility. In addition, it is used for recording operating information relevant to flight safety and should contain maintenance data that the operating crew need to know.

2. The operator's helicopter technical log system may range from a simple single section document to a complex system containing many sections but in all cases it should include the information specified for the example used here which happens to use a 5 section document / computer system:

Section 1 should contain details of the registered name and address of the operator, the helicopter type and the complete international registration marks of the helicopter.

Section 2 should contain details of when the next scheduled maintenance is due, including, if relevant any out of phase component changes due before the next maintenance check. In addition this Section should contain the current Certificate of Release to Service, for the complete helicopter, issued normally at the end of the last maintenance check.

Note: The flight crew does not need to receive such details if the next scheduled maintenance is controlled by other means acceptable to the Authority.

Section 3 should contain details of all information considered necessary to ensure continued flight safety. Such information includes that defined in CAR OPS 3.915.

Note 1: Where Section 3 is of the multi-sector 'part removable' type then such 'part removable' sections should contain all of the foregoing information where appropriate.

Note 2: Section 3 should be designed such that one copy of each page may remain on the helicopter and one other copy may be retained on the ground until completion of the flight to which it relates. See also OPS 3.140 Information retained on the ground (Subpart B).

Note 3: Section 3 lay-out should be divided to show clearly what is required to be completed after flight and what is required to be completed in preparation for the next flight.

Section 4 should contain details of all deferred defects that affect or may affect the safe operation of the helicopter and should therefore be known to the helicopter commander. Each page of this section should be pre-printed with the operator's name and page serial number and make provision for recording the following:

i. A cross-reference for each deferred defect such that the original defect can be identified in the particular Section 3 Sector Record Page.

ii. The original date of occurrence of the defect deferred.

iii. Brief details of the defect.

iv. Details of the eventual rectification carried out and its Certificate of Release to Service or a clear cross-reference back to the document that contains details of the eventual rectification.

Section 5 should contain any necessary maintenance support information that the helicopter commander needs to know. Such information would include data on how to contact maintenance engineering if problems arise whilst operating the routes etc. The helicopter technical log system can be either a paper or computer system or any combination of both methods.

3. A technical log formatted and containing the information required by EASA Part M (M.A.306 and the associated AMC) is acceptable to the Authority.

AMC OPS 3.920
Continuing Airworthiness Records
See OPS 3.920

1. The operator should ensure that he always receives a complete CAR 145 Certificate of Release to Service and any associated work pack such that the required records can be retained. The system to keep the continuing airworthiness records should be described in the operator's maintenance management exposition.

2. When the operator arranges for the relevant maintenance or continuing airworthiness management organisation to retain copies of the continuing airworthiness records on his behalf, he will nevertheless continue to be responsible for the records under OPS 3.920(b) relating to the preservation of records. If he ceases to be the operator of the helicopter, he also remains responsible for transferring the records to any other person who becomes the operator of the helicopter. The maintenance management exposition should describe who is keeping the records and where they are kept.

3. Keeping continuing airworthiness records in a form acceptable to the Authority normally means in paper form or on a computer database or a combination of both methods. Records stored in optical disc form are also acceptable.

4. Paper systems should use robust material which can withstand normal handling and filing. The record should remain legible throughout the required retention period.

5. Computer systems should have at least one backup system which should be updated at least within 24 hours of any maintenance. Each terminal is required to contain programme safeguards against the ability of unauthorised personnel to alter the database.

6. Optical storage of continuing airworthiness records may be carried out at any time. The records should be as legible as the original record and remain so for the required retention period.

7. Information on times, dates, cycles etc. as required by OPS 3.920 hereafter referred to as 'summary continuing airworthiness records' are those records that give an overall picture on the state of maintenance of the helicopter and any life-limited helicopter component. The current status of all life-limited helicopter components should indicate the component life limitation, total number of hours, accumulated cycles or calendar time and the number of hours/cycles/time remaining before the required retirement time of the component is reached.

8. The current status of airworthiness directives (AD) should identify the applicable airworthiness directives including revision or amendment numbers and the means of compliance. Where an airworthiness directive is generally applicable to the helicopter or component type but is not applicable to the particular helicopter or component, then this should be identified. The airworthiness directive status includes the date when the airworthiness directive was accomplished, and where the airworthiness directive is controlled by flight hours or flight cycles it should include the helicopter or engine or component total flight hours or cycles, as appropriate. For repetitive airworthiness directives, only the last application should be recorded in the airworthiness directive status. The status should also specify which part of a multi-part directive has been accomplished and the method, where a choice is available in the AD.

9. Details of current modification and repairs means the substantiating data supporting compliance with the airworthiness requirements. This can be in the form of a Supplemental Type Certificate, Service Bulletin, Structural Repair Manual or similar approved document.

10. The substantiating data may include:

a. Compliance programme;

b. Master drawing or drawing list, production drawings, installation instructions;

c. Engineering reports (static strength, fatigue, damage tolerance, fault analysis, etc.);

d. Ground and flight test programme and results;

e. Mass and balance change data;

f. Maintenance and repair manual supplements;

g. Maintenance programme changes and instructions for continuing airworthiness; and

h. Helicopter flight manual supplement.

Some gas turbine engines are assembled from modules and a true total time in service for a total engine is not kept. When owners and operators wish to take advantage of the modular design, then total time in service and maintenance records for each module is to be maintained. The continuing airworthiness records as specified are to be kept with the module and should show the modifications, repairs and compliance with any mandatory requirements pertaining to that module.

11. Maintenance records should be stored in a safe way with regard to fire, flood, theft and alteration.

12. Computer backup discs, tapes etc., should be stored in a different location from that containing the current working discs, tapes, etc. and in a safe environment.

AMC OPS 3.920(b)(6)
Continuing Airworthiness Records
See OPS 3.920(b)(6)

For the purpose of this paragraph, a “component vital to flight safety” means a component that includes Life Limited Parts or is subject to Airworthiness Limitations or a major component such as, undercarriage and flight controls.

AMC OPS 3.920(c)
Continuing Airworthiness Records
See OPS 3.920(c)

1. Where the operator terminates his operation, all retained continuing airworthiness records should be passed on to the new operator or, if there is no operator, stored as required by the Authority.

2. A “permanent transfer“ does not generally include the dry lease-out of a helicopter when the duration of the lease agreement is less than 6 months. However the Authority should be satisfied that all continuing airworthiness records necessary for the duration of the lease agreement are transferred to the lessee or made accessible to them. The Authority should be consulted in the case of a temporary change of operator.

AMC OPS 3.930
Continued validity of the Air Operator Certificate in Respect of the Maintenance System
See OPS 3.930

This paragraph covers scheduled changes to the maintenance system. Whilst the requirements relating to Air Operator Certificates, including their issue, variation and continued validity, are prescribed in Subpart C, this paragraph is included in Subpart M to ensure that operators remain aware that there is a requirement elsewhere which may affect continued acceptance of the maintenance arrangement.

AMC OPS 3.935
Equivalent Safety Case
See OPS 3.935

1. This paragraph is intended to provide the necessary flexibility to the Authority such that it may accept alternate means of compliance with any Subpart M requirement, particularly in the case of advancement of technology.

Appendix 1 to AMC OPS 3.905(a)
Maintenance Management Exposition Suggested Format and Required Contents

The exposition may be put together in any subject order so long as all applicable subjects are covered.

PART 0 GENERAL ORGANISATION

0.1 Corporate Commitment by the Operator

0.2 Description of the Organisation
- Brief description of organisation
- Relationship with Other Organisations
- Facilities

0.3 Continuing Airworthiness Management Personnel
- Accountable Manager
- Nominated Post Holder for Continuing Airworthiness
- Quality Manager
- Quality Auditor
- Duties and Responsibilities
  - Accountable Manager
  - Post Holder for Continuing Airworthiness
  - Quality Manager
  - Quality Auditor/Monitor
  - (Other Key members of staff with responsibilities for compliance with Subpart M)
- Organisation Chart – Continuing Airworthiness Management
- Manpower Resources and the Training Policy
- Manpower Resources
- Training
- Competence of Staff

0.4 Notification Procedure to the CAA Regarding Changes to the Operator's Maintenance Arrangements/Locations/Personnel/Activities/Approval Changes

0.5 Maintenance Management Exposition Amendment Procedures and MME Review

PART 1 CONTINUING AIRWORTHINESS AND MAINTENANCE PROCEDURES

1.0 CAR-OPS 3 Maintenance Procedures
1.1 Aircraft Technical Log Utilisation and MEL Application
- The Aircraft Technical Log
- The Technical Log Contents
- MEL Application
- MEL procedure.
- Acceptance by Pilot
- Management of the MEL Rectification Intervals (RI’s)
- MEL Rectification Interval expiry.

1.2 Aircraft Maintenance Programme
- The Maintenance Programme
- Structural Inspections and Corrosion Control
- Mandatory Life Limitations
- Inspection Standards
- Maintenance Certification
- Fuel Contamination
- The Maintenance Programme Owner
- The Holders of the Maintenance Programme
- Maintenance Programme Review, Development and Amendment
- Development and Amendment
- Maintenance Programme Meetings
- Maintenance Programme Amendments
- Maintenance Programme Variations
- Variations in Excess of that Allowed to be granted by the Operator
- Effects of Modifications and Repairs on Maintenance Programme

1.3 Continued Airworthiness Records: Responsibilities, Retention and Access
- Maintenance and Continuing Airworthiness Records
- Maintenance and Continuing Airworthiness Record Control and Management
- Monitoring of Maintenance Between Scheduled Maintenance
- Sector Record Page Retention
- Access to Maintenance and Continuing Airworthiness Records and their Preservation
- Transfer of Continuing Airworthiness Records in the Event of a Sale or Disposal of the Aircraft
- Access to Maintenance and Continuing Airworthiness Records in the Event of an Accident/Incident

1.4 Accomplishment and Control of Airworthiness Directives
- Airworthiness Directives – Access and Review
- AD Implementation
- AD Compliance Monitoring
- Recording of AD Compliance

1.5 Analysis of the Effectiveness of the Maintenance Programme
- Airworthiness Review Meetings
- Frequency of Meetings

1.6 Non-Mandatory Modification Embodiment Policy
- Modifications General
- Service Bulletins
- Other Modifications
- Recording of Modifications

1.7 Defect Reports
- Analysis
- Liaison with Manufacturers and Regulatory Authorities
- Deferred Defect Policy
- Non Deferrable Defects Away from Base
- Repetitive Defects
- Mandatory Occurrence Reporting
- Airworthiness Review Meetings
- Reliability Data Sharing/Pooling

1.8 Engineering Activity
- Modifications and Repairs
- Approval of Modifications and Repair Data

1.9 Aircraft Reliability Programmes and Engine Health Monitoring

1.10 Pre-Flight Inspection
- The Pre-flight Inspection
- The Daily Check/Check A
- Pilot Authorisation
- Sub-contracted Ground Handling functions
- Security of Cargo and Baggage loading
- Control of Aircraft Refuelling, Quantity/Quality
- Control of Snow, Ice, Dust and Sand Contamination to an Approved Standard
- Certificate of Airworthiness Validity

1.11 Mass and Balance

1.12 Alternative Configurations

1.13 Check Flight Procedures

1.14 Leasing of Aircraft

1.15 Tools and Equipment for Pre-Flight Inspections

1.16 Flight Recorder Inspections

1.17 Control of Field Loadable software and Database Loadable Data

1.18 Airworthiness Review Procedure for 2 year C of A (if applicable)

1.19 Sample of Documents, Tags and Forms Used

1.20 Other Relevant Procedures

PART 2 QUALITY AND SAFETY MANAGEMENT SYSTEM

2.1 Maintenance Quality Policy, Plan and Audit Procedures
- Maintenance and Continuing Airworthiness Quality Policy
- Management Responsibility Towards Quality
- Independence
- Document Control Policy
- Quality Programme
- Quality Audit Procedure
- Quality Audit Remedial Action Procedure
- Safety Management System

2.2 Monitoring of Maintenance Management Activities

2.3 Monitoring the Effectiveness of the Maintenance Programme

2.4 Monitoring that all Maintenance is Carried Out by an Appropriately Approved CAR 145 Maintenance Organisation

2.5 Monitoring that all Contracted Maintenance is Carried out in accordance with the Contract, including Sub-contractors used by the Maintenance Contractor

2.6 Quality Audit Personnel

PART 3 CONTRACTED MAINTENANCE

3.0 Aircraft Operated

3.1 Contracted Maintenance

3.2 Maintenance Contractor Selection Procedure

3.3 Advising to the CAA of Changes to the Maintenance Support

3.4 Detailed List of Maintenance Contractors

3.5 Relevant Technical Procedures Identified in the Maintenance Contract(s)

3.6 Contracted Continuing Airworthiness Tasks

3.7 Continuing Airworthiness Sub-Contractor Selection Procedure

3.8 Advising the CAA of Changes to the Continuing Airworthiness Sub-Contractor

3.9 Detailed List of Organisations Sub-Contracted for Continuing Airworthiness Tasks

3.10 Relevant Technical Procedures Identified in the Contract(s)

PART 4 APPENDICES

Appendix 1 – Example Sector Record Page

Appendix 2 – Example Acceptable Deferred Defect Page

Appendix 3 – Maintenance Contracts

Appendix 4 – Continuing Airworthiness Sub-Contractor Contracts

Appendix 5 – Sample Forms and Tags

Appendix 6 – The Quality Audit Programme

Note: Copies of the maintenance contracts and continuing airworthiness sub-contractor contracts if not included in the MME as an appendix, then their location should be described so that they may be readily accessed.

Appendix 1 to AMC OPS 3.910(a), (b), (c) and (d)
Operator's Helicopter Maintenance Programme
See OPS 3.910(a), (b), (c), and (d)

1.1 The maintenance programme should contain the following basic information.

1.1.1 The type/model and registration number of the helicopter, engines and, where applicable, auxiliary power units and rotors.

1.1.2 The name and address of the operator.

1.1.3 The operator's reference identification of the maintenance programme document; the date of issue and issue number.

1.1.4 A statement signed by the operator to the effect that the specified helicopters will be maintained to the maintenance programme and that the maintenance programme will be reviewed and updated as required by paragraph 3.

1.1.5 Contents/list of effective pages of the document.

1.1.6 Check periods which reflect the anticipated utilisation of the helicopter. Such utilisation should be stated and include a tolerance of not more than 25%. Where utilisation cannot be anticipated, calendar time limits should also be included.

1.1.7 Procedures for the escalation of established check periods, where applicable and acceptable to the Authority.

1.1.8 Provision to record date and reference to approved amendments incorporated in the maintenance programme.

1.1.9 Details of pre-flight maintenance tasks which are accomplished by maintenance staff and not included in the Operations Manual for action by flight crew.

1.1.10 The tasks and the periods (intervals/frequencies) at which each part of the helicopter, engines, APU's, rotors, components, accessories, equipment, instruments, electrical and radio apparatus, and associated systems and installations should be inspected, together with the type and degree of inspection.

1.1.11 The periods at which items as appropriate, should be checked, cleaned, lubricated, replenished, adjusted and tested.

1.1.12 Details of applicable ageing helicopter systems requirements together with any specified sampling programmes.

1.1.13 Details of specific structural maintenance programmes where issued by the Type Certificate holder including but not limited to:

- Maintenance of Structural Integrity by Damage Tolerance and Supplemental Structural Inspection Programmes (SSID)
- Structural maintenance programmes resulting from the Service Bulletin review performed by the Type Certificate holder
- Corrosion Prevention and Control
- Repair Assessment
- Widespread Fatigue Damage

1.1.14 A statement of the limit of validity (LOV) in terms of total flight cycles/calendar data/flight hours for the structural programme in 1.1.13.

1.1.15 The periods and procedures for the collection of engine health monitoring data.

1.1.16 The periods at which overhauls and/or replacements by new or overhauled parts should be made.

1.1.17 A cross-reference to other documents approved by the Authority which contain the details of maintenance tasks related to mandatory life limitations, Certification Maintenance Requirements (CMR's) and Airworthiness Directives (AD's).

Note: To prevent inadvertent variations to such tasks or intervals these items should not be included in the main portion of the maintenance programme document, or any planning control system, without specific identification of their mandatory status.

1.1.18 Details of, or cross-reference to, any required reliability programme or statistical methods of continuous surveillance.

1.1.19 A statement that practices and procedures to satisfy the programme should be to the standards specified in the Type Certificate holder's maintenance instructions. When practices and procedures are included in a customised operator's Maintenance Manual, the statement should refer to this manual.

1.1.20 Each maintenance task quoted should be defined in a definition section of the maintenance programme.

2. Programme basis

2.1 Operators' helicopter maintenance programmes should normally be based upon the Maintenance Review Board Report (MRBR), where available, and the Type Certificate holder's Maintenance Planning Document (MPD) or Chapter 5 of the Maintenance Manual, (i.e. the manufacturer's recommended maintenance programme). The structure and format of these maintenance recommendations may be re-written by the operator to better suit his operation and control of the particular maintenance programme.

2.2 For a newly type-certificated helicopter, where no previously approved maintenance programme exists, it will be necessary for the operator to comprehensively appraise the manufacturer's recommendations (and the MRB Report where applicable), together with other airworthiness information, in order to produce a realistic maintenance programme for approval.

2.3 For existing helicopter types it is permissible for the operator to make comparisons with maintenance programmes previously approved. It should not be assumed that a maintenance programme approved for another operator will automatically be approved for the operator. Evaluation is to be made of aircraft/fleet utilisation, landing rate, equipment fit and, in particular, the experience of the maintenance organisation must be assessed. Where the Authority is not satisfied that the proposed maintenance programme can be used as is by the operator, the Authority should request the operator to introduce appropriate changes to it, such as additional maintenance tasks or de-escalation of check frequencies, or to develop the helicopter initial maintenance programme based upon the manufacturer's recommendations.

3. Amendments

3.1 Amendments (revisions) to the approved maintenance programme should be raised by the operator, to reflect changes in the type certificate holder's recommendations, modifications, service experience, or as required by the Authority. Reliability programmes form one important method of updating approved programmes.

4. Permitted variations to maintenance periods

4.1 The operator may only vary the periods prescribed by the maintenance programme with the approval of the Authority.

AC/AMC N

FLIGHT CREW

AMC OPS 3.940(a)(4)
Crewing of Inexperienced Flight Crew Members
See OPS 3.940(a)(4)

1 The operator should consider that when two flight crew members are required, a flight crew member, following completion of a Type Rating or command course, and the associated line flying under supervision, is inexperienced until either:

a. He has achieved 50 flight hours on the type and/or in the role within a period of 60 days; or

b. He has achieved 100 flight hours on the type and/or in the role (no time limit).

2 A lesser number of flight hours, on the type and/or in the role, may be acceptable to the Authority when:

a. A new operator is commencing operations; or

b. The operator introduces a new helicopter type; or

c. Flight crew members have previously completed a type conversion course with the same operator (re-conversion); and

d. Subject to any other conditions which the Authority may impose.

AMC OPS 3.940(b)(1)
Composition of Flight Crew
See OPS 3.940(b)(1)

1 In some States the Airspace Authorities have determined that all flight at night should be conducted under IFR. These States then make provisions for helicopter flights at night to be conducted under conditions similar to night VFR in other States.

2 For States (where national legislation requires flight in accordance with IFR at night) who take advantage of this alleviation, the operator should comply with guidance published by the Authority to ensure that the pilot is appropriately qualified.

AC No 1 to OPS 3.943
Crew Resource Management (CRM)
See OPS 3.943/3.945(a)(9)/3.955(b)(6)/3.965(e)/3.965(a)(3)(iv)
See AC No. 2 to OPS 3.943

1 General

1.1 Crew Resource Management (CRM) is the effective utilisation of all available resources (e.g. crew members, helicopter systems, supporting facilities and persons) to achieve safe and efficient operation.

1.2 The objective of CRM is to enhance the communication and management skills of the flight crew member concerned. The emphasis is placed on the non-technical aspects of flight crew performance.

2 Initial CRM Training

2.1 Initial CRM training programme is designed to provide knowledge of, and familiarity with, human factors relevant to flight operations.

2.2 A CRM trainer should:

a. have followed a theoretical HPL course covering the whole syllabus of the HPL examination; or

b. have successfully passed the Human Performance and Limitations (HPL) examination (see the requirements applicable to the issue of Flight Crew Licences); and

c. have and maintain adequate knowledge of the operation and helicopter type; and

d. be supervised by suitably qualified CRM training personnel when conducting their first initial CRM training session; and

e. have knowledge of group management, group dynamics and personal awareness.

2.3 The operator should ensure that initial CRM training addresses the nature of the operations of the company concerned, as well as the associated procedures and the culture of the company. This will include areas of operations which produce particular difficulties or involve adverse climatic conditions and any unusual hazards.

2.4 If the operator does not have sufficient means to establish initial CRM training, use may be made of a course provided by another operator, or a third party or training organisation acceptable to the Authority. In this event the operator should ensure that the content of the course meets his operational requirements. When crew members from several companies follow the same course, CRM core elements should be specific to the nature of operations of the companies and the trainees concerned.

2.5 A flight crew member's CRM skills should not be assessed during initial CRM training.

3 Conversion Course CRM training

3.1 If the flight crew member undergoes a conversion course with a change of helicopter type and/or a change of operator, elements of the Initial CRM course should be covered as required.

3.2 A flight crew member should not be assessed when completing elements of CRM training which are part of the operator's conversion course.

4 Command course CRM training

4.1 The operator should ensure that elements of the Initial CRM course are integrated into the command course and covered as required.

4.2 A flight crew member should not be assessed when completing elements of CRM training which are part of the command course, although feedback should be given.

5 Recurrent CRM training

5.1 A flight crew member should not be assessed when completing elements of CRM training which are part of recurrent training.

6. Implementation of CRM

6.1 The following table indicates which elements of CRM should be included in each type of training

Table 1

<table>
<tr><th>Core Elements

(a)</th><th>Initial CRM training

(b)</th><th>Operator's conversion course when changing type

(c)</th><th>Operators conversion course when changing operator
(d)</th><th>Command course

(e)</th><th>Recurrent training

(f)</th></tr>
<tr><td>Human error and reliability, error chain, error prevention and detection</td><td rowspan="7">In depth</td><td>In depth</td><td>Overview</td><td>Overview</td><td rowspan="7">Overview</td></tr>
<tr><td>Company safety culture, SOPs, organisational factors</td><td rowspan="2">Not required</td><td>In depth</td><td rowspan="6">In depth</td></tr>
<tr><td>Stress, stress management, fatigue and vigilance</td><td rowspan="3">Not required</td></tr>
<tr><td>Information acquisition and processing, situational awareness, workload management</td><td rowspan="4">Overview</td></tr>
<tr><td>Decision making</td></tr>
<tr><td>Communication and coordination inside and outside the cockpit</td><td rowspan="2">Overview</td></tr>
<tr><td>Leadership and team behaviour synergy</td></tr>
<tr><td>Automation, philosophy of the use of automation (if relevant to the type)</td><td></td><td rowspan="2">In depth</td><td>In depth</td><td rowspan="2">As required</td><td rowspan="2">As required</td></tr>
<tr><td>Specific type related differences</td><td>As required</td><td>Not required</td></tr>
<tr><td>Case based studies</td><td>In depth</td><td>In depth</td><td>In depth</td><td>In depth</td><td>As appropriate</td></tr>
</table>

7 Co-ordination between flight crew and crew members other than flight crew training

7.1 Operators should, as far as is practicable, provide combined training for flight crew and crew members other than flight crew including briefing and debriefing.

7.2 There should be an effective liaison between flight crew and other crew members training departments. Provision should be made for flight and other crew instructors to observe and comment on each other's training.

AC No. 2 to OPS 3.943
Crew Resource Management (CRM)
See OPS 3.943/3.945(a)(9)/3.955(b)/3.965(e)/3.965(a)(3)(iv)
See AC No. 1 to OPS 3.943

1 CRM training should reflect the culture of the operator and be conducted by means of both classroom training and practical exercises including group discussions and accident and serious incident reviews to analyse communication problems and instances or examples of a lack of information or crew management.

2 Whenever it is practicable to do so, consideration should be given to conducting relevant parts of CRM training in synthetic training devices which reproduce, in an acceptable way, a realistic operational environment and permit interaction. This includes, but is not limited to, simulators with appropriate LOFT scenarios.

3 It is recommended that, whenever possible, initial CRM training be conducted in a group session outside the company premises so that the opportunity is provided for flight crew members to interact and communicate away from the pressures of their usual working environment.

4 Assessment of CRM Skills

4.1 Assessment is the process of observing, recording, interpreting and evaluating, where appropriate, pilot performance and knowledge against a required standard in the context of overall performance. It includes the concept of self-critique, and feedback which can be given continuously during training or in summary following a check.

4.2 CRM skills assessment should be included in an overall assessment of the flight crew members performance and be in accordance with approved standards. Suitable methods of assessment should be established, together with the selection criteria and training requirements of the assessors and their relevant qualifications, knowledge and skills.

4.3 Individual assessments are not appropriate until the crew member has completed the initial CRM course and completed the first OPC. For first CRM skills assessment, the following methodology is considered satisfactory:

a. The operator should establish the CRM training programme including an agreed terminology. This should be evaluated with regard to methods, length of training, depth of subjects and effectiveness.

b. A training and standardisation programme for training personnel should then be established.

c. For a transition period, the evaluation system should be crew rather than individually based.

5. Levels of Training (For any CRM training, the following two levels are recognised):.

a. Overview. When Overview training is required it will normally be instructional in style. Such training should refresh knowledge gained in earlier training.

b. In Depth. When In Depth Training is required it will normally be interactive in style and should include, as appropriate, case studies, group discussions, role play and consolidation of knowledge and skills. Core elements should be tailored to the specific needs of the training phase being undertaken.

AC OPS 3.945(a)(9)
Crew Resource Management - Use of Automation
See OPS 3.945(a)(9)

1 The conversion course should include training in the use and knowledge of automation and in the recognition of systems and human limitations associated with the use of automation. The operator should therefore ensure that a flight crew member receives training on:

a. The application of the operations policy concerning the use of automation as stated in the Operations Manual; and

b. System and human limitations associated with the use of automation.

2 The objective of this training should be to provide appropriate knowledge, skills and behavioural patterns for managing and operating automated systems. Special attention should be given to how automation increases the need for crews to have a common understanding of the way in which the system performs, and any features of automation which make this understanding difficult.

AMC OPS 3.945
Conversion Course Syllabus
See OPS 3.945

1 General

1.1 The conversion course should be conducted in the following order:

a. Ground training covering all helicopter systems and emergency procedures (with or without flight simulator or other training device).

b. Emergency and safety equipment training and checking (completed before flying training on the helicopter commences).

c. Flying training (flight simulator and/or helicopter).

d. Line flying under supervision.

2 Ground training

2.1 Ground training should comprise a properly organised programme of ground instruction by training staff with adequate facilities, including any necessary audio, mechanical and visual aids. However, if the helicopter concerned is relatively simple, private study may be adequate if the operator provides suitable manuals and/or study notes.

2.2 The course of ground instruction should incorporate formal tests on such matters, where applicable, as helicopter systems, performance and flight planning, etc.

3 Flying training

3.1 Flying training should be structured and sufficiently comprehensive to familiarise the flight crew member thoroughly with all aspects of limitations and normal operation of the helicopter, including the use of all cockpit equipment, and with all abnormal/emergency procedures and should be carried out by suitably qualified Type Rating Instructors and/or Type Rating Examiners.

3.2 In planning flying training on helicopters with a flight crew of 2 or more, particular emphasis should be placed on the practice of Line Orientated Flying Training (LOFT) with emphasis on Crew Resource Management (CRM) and the use of correct crew coordinated procedures, including coping with incapacitations.

3.3 Generally the same training and practice in the flying of the helicopter should be given to co-pilots as well as commanders. The 'flight handling' sections of the syllabus for commanders and co-pilots alike should include all the requirements of the appropriate proficiency check required by OPS 3.965.

3.4 Training should include all elements of an instrument rating test where it is likely that the flight crew member will be required to operate under IFR.

3.5 Unless the training programme has been carried out in an appropriate flight simulator, and in a manner approved for zero flight time conversions, the training required should include an element of proficiency training on a helicopter, including at least 3 take-offs and landings.

3.6 Unless already covered by paragraph 3.3 above before they are assigned to line duty all flight crew should have successfully completed a proficiency check with a Type Rating Examiner.

4 Emergency and safety equipment training and checking. Emergency and safety equipment training should take place whenever practicable in conjunction with crew members doing similar training with emphasis on co-ordinated procedures and two-way communications.

4.1 For new crew members, or as applicable on conversion, the following should be addressed:

a. Instruction should be given on aeromedical topics which should include at least:

i. First aid subjects in general, and as appropriate to the helicopter type and crew complement;

ii. Guidance on the avoidance of food poisoning;

iii. The possible dangers associated with the contamination of the skin or eyes by aviation fuel and other fluids and the immediate treatment;

iv. The recognition and treatment of hypoxia and hyperventilation; and,

v. Survival training and guidance on hygiene appropriate to the routes operated.

b. Training should also include:

i. The importance of effective coordination between flight crew and crew members;

ii. The use of smoke protection equipment and protective clothing where carried. In the case of the first type of helicopter so equipped, training should be associated with experience of movement in a cosmetic smoke filled environment; and

iii. Actual firefighting using equipment representative of that carried in the helicopter;

iv. The operational procedures of security, rescue and emergency services.

c. Operators should provide survival training appropriate to their areas of operation, (e.g. polar, desert, jungle or sea), including the use of any survival equipment carried.

d. A comprehensive drill to cover all ditching procedures should be practised where flotation equipment is carried. This should include practice of the actual donning and inflation of a life-jacket, together with a demonstration or film of the inflation of life-rafts and/or slide-rafts and associated equipment. This practice should, in initial training, be conducted using the equipment in water, although previous certificated training with another operator or the use of similar equipment will be accepted in lieu of further wet drill training.

e. Instruction on the location of emergency and safety equipment, correct use of all appropriate drills, and procedures that could be required of flight crew in different emergency situations. Evacuation of the helicopter (or a realistic training device) by use of a slide where fitted should be included when the Operations Manual procedure requires the early evacuation of flight crew to assist on the ground.

f. On completion of emergency and safety equipment training the flight crew member should undergo the check specified in OPS 3.965(c).

5 Line flying under supervision

5.1 Following completion of flying training and checking as part of the conversion course, all flight crew members should operate a minimum number of sectors and/or flying hours under the supervision of a nominated flight crew member. The minimum figures should be specified in the Operations Manual and should be selected after due note has been taken of the complexity of the helicopter and the experience of the flight crew member.

5.2 On completion of the sectors and/or flying hours under supervision, a line check should be completed.

6 Passenger handling. Other than general training on dealing with people, emphasis should be placed on the following:

a. Advice on the recognition and management of passengers who appear or become intoxicated with alcohol, under the influence of drugs or aggressive;

b. Methods used to motivate passengers and the crowd control necessary to expedite a helicopter evacuation;

c. Awareness of the types of dangerous goods which may, and may not, be carried in a passenger cabin, including the completion of a dangerous goods training programme; and

d. The importance of correct seat allocation with reference to helicopter mass and balance. Particular emphasis should also be given on the seating of disabled passengers and the necessity of seating able-bodied passengers adjacent to unsupervised exits.

7 Discipline and responsibilities. Amongst other subjects, emphasis should be placed on discipline and an individual's responsibilities in relation to:

a. His ongoing competence and fitness to operate as a crew member with special regard to flight time limitation requirements; and

b. Security procedures.

8. Passenger briefing/safety demonstrations. Training should be given in the preparation of passengers for normal and emergency situations.

AMC OPS 3.945
Line Flying under Supervision
See OPS 3.945

1 Line flying under supervision provides the opportunity for a flight crew member to carry into practice the procedures and techniques he has been made familiar with during ground and flying training on a conversion course. This is accomplished under the supervision of a flight crew member specifically nominated and trained for the task. At the end of line flying under supervision the respective student crew member is able to perform a safe and efficient flight conducted within the tasks of his crew member station.

2 A variety of reasonable combinations may exist with respect to:

a. A flight crew member's previous experience;

b. The complexity of the helicopter concerned; and

c. The type of route/role/area operations,

AMC OPS 3.945(a)(8)
Completion of the Operator's Conversion Course
See OPS 3.945(a)(8)

1 A conversion course is deemed to have started when the flying or FSTD has begun. The theoretical element of a conversion course may be undertaken ahead of the practical element.

2 Under certain circumstances a conversion course may have started and reached a stage where, for unforeseen reasons, it is not possible to complete it without a delay. In these circumstances the operator may apply to the Authority to allow the pilot to revert to the original type.

3 Before the resumption of the conversion course the operator should establish with the Authority how much of the conversion course needs to be re-covered before continuing with the remainder of the course.

AMC Appendix 1 to OPS 3.955(a)(1)(v)
Upgrading to Commander - CRM training
See Appendix 1 to OPS 3.955(a)(1)(v)

1 The objective of this training is to enhance the communication and management skills of the flight crew member concerned. The emphasis is placed on the non-technical aspects of flight crew performance.

2 This CRM training should contain the following elements:

a. The basic module

i. Situational awareness;

ii. Appropriate assertiveness/guidelines for effective speaking up;

iii. Effective communication within the crew;

iv. Enhancing crew co-operation;

v. Identifying and managing stress.

b. The specific module; aimed at management skills.

i. Information management including the effective utilisation of all available resources such as other crew members, aircraft systems, supporting facilities and information from outside.

ii. Leadership;

iii. Delegation;

iv. Judgement and decision making;

v. Effective communication skills as desired for commanders.

3 This training should include both:

a. Classroom training; and

b. Practical exercises including group discussions and accident reviews to analyse communication problems and instances or examples of a lack of information or crew management.

AMC OPS 3.965
Recurrent Training and Checking
See OPS 3.965

1 General. The line check is performed in the helicopter. All other training and checking should be performed in the helicopter or an appropriate Synthetic Training Device or, in the case of emergency and safety equipment training, in a suitable alternative training device. The type of equipment used for training and checking should be representative of the instrumentation, equipment and layout of the helicopter type operated by the flight crew member.

2 Line Checks

2.1 The operator has a statutory obligation to check that his pilots are competent to perform their duties. The line check is considered a particularly important factor in the development, maintenance and refinement of high operating standards, and can provide the operator with a valuable indication of the usefulness of his training policy and methods. The requirement is for a test of ability to perform satisfactorily a complete line operation from start to finish, including pre-flight and post-flight procedures and use of the equipment provided and for an involvement of an overall assessment of the ability to perform the duties required as specified in the Operations Manual. The route chosen should be such as to give adequate representation of the scope of a pilot's normal operations. The line check is not intended to determine competence on any particular route.

2.2 The commander in particular should also demonstrate his ability to 'manage' the operation and take appropriate command decisions.

a. Since pilots may carry out either the handling or the non-handling duties, all pilots should be checked in both roles.

3 Proficiency Training and Checking. When a flight simulator is used, the opportunity should be taken, where possible, to use Line Oriented Flying Training (LOFT).

AC OPS 3.965(d)
Emergency and Safety Equipment Training
See OPS 3.965(d)

1 The successful resolution of helicopter emergencies requires interaction between crew members and emphasis should be placed on the importance of effective co-ordination and two-way communication between all crew members in various emergency situations.

2 Emergency and Safety Equipment training should include joint practice in helicopter evacuations so that all who are involved are aware of the duties other crew members should perform. When such practice is not possible, combined flight crew and other crew member training should include joint discussion of emergency scenarios.

3 Emergency and safety equipment training should, as far as is practicable, take place in conjunction with other crew members undergoing similar training with emphasis on co-ordinated procedures and two-way communication between the flight deck and the cabin.

AMC Appendix 1 to OPS 3.965
Recurrent Training and Checking
See Appendix 1 to OPS 3.965

1 Use and approval of Synthetic Training Devices (FSTD) training. Training and checking provides an opportunity for the practice of abnormal/emergency procedures which rarely arise in normal operations and is a part of a structured programme of recurrent training. This should be carried out in a Synthetic Training Device whenever possible.

2 Where there is a Flight Manual limitation on the use of certain emergency power ratings, procedures to permit realistic engine-failure training and demonstration of competence, without actual use of the emergency power ratings, must be developed in conjunction with the aircraft manufacturer and included in the aircraft flight manual. These procedures must also be approved by the Authority.

3 Where the emergency drills require action by the non-handling pilot, the check should additionally cover knowledge of these drills.

4 Because of the unacceptable risk when simulating emergencies such as rotor failure, icing problems, certain types of engine(s) (e.g. during continued take-off or go-around, total hydraulic failure etc.), or because of environmental considerations associated with some emergencies (e.g. fuel dumping) these emergencies should preferably be covered in a Synthetic Training Device. If no Synthetic Training Device is available these emergencies may be covered in the helicopter using a safe airborne simulation, bearing in mind the effect of any subsequent failure, and discussion on the ground.

5 The operator proficiency check may include the annual instrument rating test. In this case a combined check report may be used details of which shall be contained in the Operations Manual.

AMC to Appendix 1 to OPS 3.965 sub-paragraph (a)(3)(iii)(D)
Water Survival Training
See Appendix 1 to OPS 3.965 sub-paragraph (a)(3)(iii)(D)

1 Where life-rafts are fitted for extended overwater operations (such as Sea Pilot transfer; offshore operation; regular, or scheduled, coast to coast overwater operations; or other operations designated as such by the Authority), a comprehensive wet drill to cover all ditching procedures should be practised by aircraft crews. This wet drill is to include, as appropriate, practice of the actual donning and inflation of a life-jacket, together with a demonstration or film of the inflation of life-rafts. Crews should board the same (or similar) life-rafts from the water whilst wearing a life-jacket. Training should include the use of all survival equipment carried on board life-rafts and any additional survival equipment carried separately on board the aircraft.

2 Consideration should be given to the provision of further specialist training such as underwater escape training.

Note: Wet practice drill is always to be given in initial training unless the crew member concerned has received similar training provided by another operator and such an arrangement is acceptable to the Authority.

AMC OPS 3.975
Route/Role/Area Competence Qualification
See OPS 3.975

1 Route/role/area competence training should include knowledge of:

a. Terrain and minimum safe altitudes;

b. Seasonal meteorological conditions;

c. Meteorological, communication and air traffic facilities, services and procedures;

d. Search and rescue procedures;

e. Navigational facilities associated with the route along which the flight is to take place; and

f. Obstructions, physical layout, lighting, approach aids and arrival, departure, holding and instrument approach procedures and applicable operating minima.

2 Depending on the complexity of the route and/or aerodrome, the following methods of familiarisation should be used:

a. For the less complex route/role/area and/or heliport, familiarisation by self-briefing with route documentation, or by means of programmed instruction, and

b. For the more complex routes and/or heliports, in addition to sub-paragraph 2a above, in-flight familiarisation as a commander, co-pilot or observer under supervision, or familiarisation in an approved flight simulator using a data base appropriate to the route concerned.

3 Route competence may be revalidated by operating on the route within the previous period of validity instead of the procedure given in paragraph 2 above.

AMC OPS 3.980
Operation on More than one Type or Variant
See OPS 3.980

1 Operators of more than one helicopter variant or type should provide in the Operations Manual:

a. Flight crew members minimum experience level;

b. The process whereby flight crew qualified on one type or variant will be trained and qualified on another type or variant; and

c. Any additional recency requirements that may be required.

2 If a flight crew member operates more than one type or variant the following provisions should be satisfied:

a. The recency requirements specified in OPS 3.970 should be met and confirmed prior to commercial air transport operations on any type, and the minimum number of flights on each type within a three month period specified in the Operations Manual;

b. OPS 3.965 requirements with regard to recurrent training;

c. OPS 3.965 requirements with regard to proficiency checks may be satisfied by a 6 monthly check on any one type or variant operated. However, a proficiency check on each type or variant operated should be completed every 12 months;

d. For helicopters with a maximum certificated take-off mass (MCTOM) exceeding 5700 kg, or with a maximum approved passenger seating configuration (MAPSC) of more than 19:

i. The flight crew member should not fly more than two helicopter types;

ii. A minimum of 3 months and 150 hours experience on the type or variant should be achieved before the flight crew member should commence the conversion course onto the new type or variant;

iii. 28 days and/or 50 hours flying should then be achieved exclusively on the new type or variant; and

iv. A flight crew member should not be rostered to fly more than one type or significantly different variant of a type during a single duty period.

e. In the case of all other helicopters, a flight crew member should not operate more than three helicopter types or significantly different variant.

f. For a combination of helicopter and aeroplane:

i. A flight crew member may fly one helicopter type or variant and one aeroplane type irrespective of their maximum certificated take-off mass (MCTOM) or the maximum approved passenger seating configuration (MAPSC) that may be carried.

ii. If the helicopter type is covered by paragraph 2.d. then paragraphs 2.d.ii., 2.d.iii. and 2.d.iv should also apply in this case.

AMC OPS 3.985
Training Records
See OPS 3.985

A summary of training should be maintained by the operator to show a trainee's completion of each stage of training and checking.

AC O

CREW MEMBERS OTHER THAN FLIGHT AND CABIN CREW

AC OPS 3.995(b)
Minimum Requirements
See OPS 3.995(a)(2)

1 The initial medical examination or assessment and any re-assessment of crew members should be conducted by, or under the supervision of, a medical practitioner acceptable to the Authority.

2 The operator should maintain a medical record for each crew member.

3 The following medical requirements are applicable for each crew member:

a. Good health;

b. Free from any physical or mental illness which might lead to incapacitation or inability to perform crew duties;

c. Normal cardio respiratory function;

d. Normal central nervous system;

e. Adequate visual acuity 6/9 with or without glasses;

f. Adequate hearing; and

g. Normal function of ear, nose and throat.

AC OPS 3.1005
Initial Training
See OPS 3.1005

1 The operator should ensure that all elements of initial training are conducted by suitably qualified persons.

2 *Fire and Smoke Training*. The operator should ensure that fire and smoke training includes:

2.1 Emphasis on the responsibility of crew to deal promptly with emergencies involving fire and smoke and, in particular, emphasis on the importance of identifying the actual source of the fire;

2.2 The classification of fires and the appropriate type of extinguishing agents and procedures for particular fire situations, the techniques of application of extinguishing agents, the consequences of misapplication, and of use in a confined space; and

2.3 The general procedures of ground-based emergency services at heliports.

3 *Water Survival Training*. The operator should ensure that, when extended overwater operations are to be conducted, water survival training includes the actual donning and use of personal flotation equipment in water by each crew member. Before first operating on a helicopter fitted with life-rafts or other similar equipment, training must be given on the use of this equipment, as well as actual practice in water.

4 *Survival Training*. The operator should ensure that survival training is appropriate to the areas of operation, (e.g. polar, desert, jungle, sea or mountain).

5 *Medical aspects and First Aid*. The operator should ensure that medical and first aid training includes:

5.1 Instruction on first aid and the use of first-aid kits; and

5.2 The physiological effects of flying and with particular emphasis on hypoxia (when applicable).

6 *Passenger handling*. The operator should ensure that training for passenger handling includes the following:

6.1 Regulations covering the safe stowage of cabin baggage and the risk of it becoming a hazard to occupants of the cabin or otherwise obstructing or damaging emergency equipment or helicopter exits;

6.2 Duties to be undertaken in the event of encountering turbulence including securing the cabin;

6.3 Precautions to be taken when live animals are carried in the cabin;

6.4 Dangerous Goods training as prescribed in Subpart R; and

6.5 Security procedures, including the provisions of Subpart S.

7 *Communication*. The operator should ensure that, during training, emphasis is placed on the importance of effective communication between crew members and flight crew including technique, common language and terminology.

8 *Discipline and responsibilities*. The operator should ensure that each crew member receives training on:

8.1 The importance of crew members performing their duties in accordance with the Operations Manual;

8.2 Continuing competence and fitness to operate as a crew member with special regard to flight and duty time limitations and rest requirements;

8.3 An awareness of the aviation regulations relating to crew members and the role of the Authority;

8.4 General knowledge of relevant aviation terminology, theory of flight, passenger distribution, meteorology and areas of operation;

8.5 Pre-flight briefing of the crew members and the provision of necessary safety information with regard to their specific duties;

8.6 The importance of ensuring that relevant documents and manuals are kept up-to-date with amendments provided by the operator;

8.7 The importance of identifying when crew members have the authority and responsibility to initiate an evacuation and other emergency procedures; and

8.8 The importance of safety duties and responsibilities and the need to respond promptly and effectively to emergency situations.

9 *Crew Resource Management*. The operator should ensure that appropriate OPS 3 requirements are included in the training of crew members.

AC OPS 3.1010
Conversion and Differences Training
See OPS 3.1010

1 *General.* The operator should ensure that:

1.1 Conversion and differences training is conducted by suitably qualified persons; and

1.2 During conversion and differences training, training is given on the location, removal and use of all safety and survival (and additional) equipment carried on the helicopter, as well as all normal and emergency procedures related to the helicopter type, variant and configuration to be operated.

2 *Fire and smoke training*. The operator should ensure that either:

2.1 Each crew member is given realistic and practical training in the use of all firefighting equipment including protective clothing representative of that carried in the helicopter. This training should include:

a. Each crew member extinguishing a fire characteristic of a helicopter interior fire except that, in the case of Halon extinguishers, an alternative extinguishing agent may be used; and

b. The donning and use of protective breathing equipment (when fitted) by each crew member in an enclosed, simulated smoke-filled environment; or

2.2 Each crew member fulfils the recurrent training requirements of AC OPS 3.1015 subparagraph 3.3.

3 *Operation of doors and exits*. The operator should ensure that:

3.1 Each crew member operates and actually opens all normal and emergency exits for passenger evacuation in a helicopter or representative training device; and

3.2 The operation of all other exits is demonstrated.

4 Evacuation procedures and other emergency situations. The operator should ensure that:

4.1 Emergency evacuation training includes the recognition of planned or unplanned evacuations on land or water. This training must include recognition of when exits are unusable or when evacuation equipment is unserviceable; and

4.2 Each crew member is trained to deal with the following:

a. An in-flight fire, with particular emphasis on identifying the actual source of the fire; and

b. Other in-flight emergencies.

5 *Pilot incapacitation*. The operator should ensure that, where the flight crew is more than one, the crew member is trained to assist if a pilot becomes incapacitated. This training should include a demonstration of:

5.1 The pilot's seat mechanism;

5.2 Fastening and unfastening the pilot's seat harness;

5.3 Use of the pilot's oxygen equipment, when applicable; and

5.4 Use of pilots' checklists.

6 *Safety equipment*. The operator should ensure that each crew member is given realistic training on, and demonstration of, the location and use of safety equipment including the following:

6.1 Life-rafts, including the equipment attached to, and/or carried in, the raft, where applicable;

6.2 Lifejackets, infant lifejackets and flotation cots, where applicable;

6.3 Fire extinguishers;

6.4 Fire axe or crow-bar;

6.5 Emergency lights including torches;

6.6 Communications equipment, including megaphones;

6.7 Survival packs, including their contents;

6.8 Pyrotechnics (actual or representative devices);

6.9 First-aid kits, their contents and emergency medical equipment; and

6.10 Other safety equipment or systems where applicable.

7 *Passenger Briefing/Safety Demonstrations.* The operator should ensure that training is given in the preparation of passengers for normal and emergency situations in accordance with OPS 3.285.

8 The operator should ensure that all appropriate OPS 3 requirements are included in the training of crew members.

AC OPS 3.1015
Recurrent training
See OPS 3.1015

1 The operator should ensure that recurrent training is conducted by suitably qualified persons.

2 The operator should ensure that every year the programme of practical training includes the following:

2.1 Emergency procedures including pilot incapacitation, when applicable;

2.2 Evacuation procedures;

2.3 Touch-drills by each crew member for opening normal and emergency exits for passenger evacuation;

2.4 The location and handling of emergency equipment, and the donning by each crew member of lifejackets, and protective breathing equipment (PBE), when applicable;

2.5 First aid and the contents of the first-aid kit(s);

2.6 Stowage of articles in the cabin;

2.7 Dangerous goods procedures as prescribed in Subpart R;

2.8 Security procedures;

2.9 Incident and accident review; and

2.10 Crew Resource Management.

3 The operator should ensure that, every 3 years, recurrent training also includes:

3.1 The operation and actual opening of all normal and emergency exits for passenger evacuation in a helicopter or representative training device;

3.2 Demonstration of the operation of all other exits;

3.3 Each crew member being given realistic and practical training in the use of all fire-fighting equipment, including protective clothing, representative of that carried in the helicopter. This training should include:

a. Each crew member extinguishing a fire characteristic of a helicopter interior fire except that, in the case of Halon extinguishers, an alternative extinguishing agent may be used; and

b. The donning and use of protective breathing equipment (when fitted) by each crew member in an enclosed, simulated smoke-filled environment.

3.4 Use of pyrotechnics (Actual or representative devices); and

3.5 Demonstration of the use of the life-raft, where fitted.

4 The operator should ensure that all appropriate OPS 3 requirements are included in the training of crew members.

AC OPS 3.1020
Refresher Training
See OPS 3.1020

1 The operator should ensure that refresher training is conducted by suitably qualified persons and, for each crew member, includes at least the following:

1.1 Emergency procedures including pilot incapacitation, when applicable;

1.2 Evacuation procedures;

1.3 The operation and actual opening of all normal and emergency exits for passenger evacuation in a helicopter or representative training device;

1.4 Demonstration of the operation of all other exits; and

1.5 The location and handling of emergency equipment, and the donning of lifejackets, and protective breathing equipment, when applicable.

AC OPS 3.1025
Checking
See OPS 3.1025

1 Elements of training which require individual practical participation should be combined with practical checks.

2 The checks required by OPS 3.1025 should be accomplished by the method appropriate to the type of training including:

a. Practical demonstration; and/or

b. Computer based assessment; and/or

c. In-flight checks; and/or

d. Oral or written tests.

AMC P

MANUALS, LOGS & RECORDS

AMC OPS 3.1040(b)
Elements of the Operations Manual Subject to Approval
See OPS 3.1040(b)

1 A number of the provisions of OPS 3 require the prior approval of the Authority. As a consequence, the related sections of the Operations Manual should be subject to special attention. In practice, the Authority approves the operations manual, which encompasses approval of the subjects below.

Ops Manual Section (App. 1 to OPS 3.1045) Subject			OPS Reference
A 2.4	Operational Control		3.195
A 5.2(f)	Procedures for flight crew to operate on more than one type or variant		3.980
A 5.3(c)	Procedures for cabin crew to operate on four helicopter types		3.1030(a)
A 8.1.1	Method of determination of minimum flight attitudes		3.250(b)
A 8.1.8	(i)	Standard mass values other than those specified in Subpart J Mass and balance:	3.620(i
	(ii)	Alternative documentation and related procedures	3.625(c
	(iii)	Omission of data from documentation	App. 1 to OPS 3.625,§(a)(1)(ii)
	(iv)	Special standard masses for the traffic load	App. 1 to OPS 3.605, § (b)
A 8.1.11	Tech Log		3.915(b)
A 8.3.2(c)	RNAV (PBN)		3.243
A 8.4	All Weather Operations		3.440(a)(3), (b) & App.1 to OPS 3.455, Note 2
A 8.6	Use of MEL		3.030(a)
A 9	Dangerous Goods		3.1155
B 1.1(b)	Max. approved passenger seating configuration		3.480(a)(15)
B 6(b)	Use of on-board mass and balance systems		App. 1 to OPS 3.625, § (c)
B 9	MEL		3.030(a)
D 2.1	Cat II Training syllabus flight crew		3.450(a)(2)
	Recurrent training programme flight crew		3.965(a)(2)
D 2.2	Recurrent training programme cabin crew		3.1015(b)
D 2.3(a)	Dangerous Goods		3.1220(a)

AMC OPS 3.1040(c
Operations Manual - Language
See OPS 3.1040(c)

1 OPS 3.1040(c) requires the Operations Manual to be prepared in the English language. However, it is recognised that there may be circumstances where approval for the use of another language, for part or all of the Operations Manual, is justifiable. The criteria on which such an approval may be based should include at least the following:

a. The language(s) commonly used by the operator;

b. The language of related documentation used, such as the HFM;

c. Size of the operation;

d. Scope of the operation i.e. domestic or international route structure;

e. Type of operation e.g. VFR/IFR; and

f. The period of time requested for the use of another language.

AMC OPS 3.1045
Operations Manual Contents
See OPS 3.1045

1 Appendix 1 to OPS 3.1045 prescribes in detail the operational policies, instructions, procedures and other information to be contained in the Operations Manual in order that operations personnel can satisfactorily perform their duties. When compiling an Operations Manual, the operator may take advantage of the contents of other relevant documents. Material produced by the operator for Part B of the Operations Manual may be supplemented with or substituted by applicable parts of the Helicopter Flight Manual required by OPS 3.1050 or, where such a document exists, by a Helicopter Operating Manual produced by the manufacturer of the helicopter. For Part C of the Operations Manual, material produced by the operator may be supplemented with or substituted by applicable Route Guide material produced by a specialised professional company .

2 If the operator chooses to use material from another source in his Operations Manual he should either copy the applicable material and include it directly in the relevant part of the Operations Manual, or the Operations Manual should contain a statement to the effect that a specific manual(s) (or parts thereof) may be used instead of the specified part(s) of the Operations Manual.

3 If the operator chooses to make use of material from an alternative source (e.g. Jeppesen) as explained above, this does not absolve the operator from the responsibility of verifying the applicability and suitability of this material. (See OPS 3.1040(k).)

AMC OPS 3.1045(c)
Operations Manual Structure
See OPS 3.1045(c) & Appendix 1 to OPS 3.1045

1 OPS 3.1045(a) prescribes the main structure of the Operations Manual as follows:

Part A - General/Basic;

Part B - Helicopter Operating Matters - Type Related;

Part C - Route and Aerodrome Instructions and Information;

Part D - Training.

2 OPS 3.1045 (c) requires the operator to ensure that the detailed structure of the Operations Manual is acceptable to the Authority.

3 Appendix 1 to OPS 3.1045 contains a comprehensively detailed and structured list of all items to be covered in the Operations Manual.

4 Manuals which do not comply with the recommended structure may require a longer time to be accepted/approved by the Authority.

5 To facilitate comparability and usability of Operations Manuals by new personnel, formerly employed by another operator, operators are recommended not to deviate from the numbering system used in Appendix 1 to OPS 3.1045. If there are sections which, because of the nature of the operation, do not apply, it is recommended that operators maintain the numbering system described below and insert 'Not applicable' or 'Intentionally blank' where appropriate.

AMC Appendix 1 to OPS 3.1045
Operations Manual Contents

With reference to Operations Manual Section B, paragraph 9 (Minimum Equipment List) and 12 (Helicopter Systems) operators should give consideration to using the ATA number system when allocating chapters and numbers for helicopter systems.

AMC OPS 3.1055(a)(12)
Signature or Equivalent
See OPS 3.1055(a)(12)

1 OPS 3.1055 requires a signature or its equivalent. This AMC gives an example of how this can be arranged where normal signature by hand is impracticable and it is desirable to arrange the equivalent verification by electronic means.

2 The following conditions should be applied in order to make an electronic signature the equivalent of a conventional hand-written signature:

i. Electronic 'signing' should be achieved by entering a Personal Identification Number (PIN) code with appropriate security etc.;

ii. Entering the PIN code should generate a print-out of the individual's name and professional capacity on the relevant document(s) in such a way that it is evident, to anyone having a need for that information, who has signed the document;

iii. The computer system should log information to indicate when and where each PIN code has been entered;

iv. The use of the PIN code is, from a legal and responsibility point of view, considered to be fully equivalent to signature by hand;

v. The requirements for record keeping remain unchanged; and.

vi. All personnel concerned should be made aware of the conditions associated with electronic signature and should confirm this in writing.

AMC OPS 3.1055(b)
Journey Log
See OPS 3.1055(b)

The 'other documentation' referred to in this paragraph might include such items as the operational flight plan, the helicopter technical log, cockpit flight report, crew lists etc.

AMC Q

FLIGHT/DUTY TIME AND REST REQUIREMENTS

(reserved)

AMC R

TRANSPORT OF DANGEROUS GOODS BY AIR

AMC OPS 3.1150(a)(3) & (a)(4)
Terminology - Dangerous Goods Accident and Dangerous Goods Incident
See OPS 3.1150(a)(3) & (a)(4)

As a dangerous goods accident (see OPS 3.1150(a)(3)) and dangerous goods incident (see OPS 3.1150(a)(4)) may also constitute an aircraft accident or incident the criteria for reporting both types of occurrence should be satisfied.

AC OPS 3.1145
General Applicability

ICAO Annex 18 — The Safe Transport of Dangerous Goods by Air include broad provisions for the international transport of dangerous goods by air which are amplified in the Technical Instructions for the Safe Transport of Dangerous Goods by Air (Doc 9284, Technical Instructions). Annex 18, Chapter 2 includes provisions making dangerous goods under certain conditions not subject to Annex 18. These are amplified in Parts 1;1 and 1;2 of the Technical Instructions.

Due to the differences in the type of operations carried out by helicopters, compared to those of aeroplanes, some additional considerations need to be made when dangerous goods are carried by helicopter, as described in the Technical Instructions for the Safe Transport of Dangerous Goods by Air (Doc 9284, Technical Instructions), Part 7;7.

AMC OPS 3.1145
Responsibilities

1 ICAO Annex 18, Chapter 2, contains requirements for each State to take the necessary measures to achieve compliance with the detailed provisions contained in the Technical Instructions.

2 Operator responsibilities for the transport of dangerous goods are contained in Chapters 8, 9 and 10 of Annex 18. Part 7 of the Technical Instructions contains the operator's responsibilities and requirements for incident and accident reporting.

3 Annex 18, Chapter 11 contains requirements for each Contracting State to establish oversight procedures for all entities (including packers, shippers, ground handling agents and operators) performing dangerous goods functions.

4 The requirements pertaining to crew members or passengers carrying dangerous goods on aircraft are set forth in Part 8;1, of the Technical Instructions.

5 Operator material (COMAT) that meets the classification criteria of the Technical Instructions for dangerous goods are considered cargo and must be transported in accordance with Part 1;2;2.2 of the Technical Instructions (e.g. aircraft parts such as chemical oxygen generators, fuel control units, fire extinguishers, oils, lubricants and cleaning products).

AMC OPS 3.1155
Approval to Transport Dangerous Goods
See OPS 3.1155

1 Permanent approval for the transport of dangerous goods will be reflected on the Air Operator Certificate. In other circumstances an approval may be issued separately.

2 The exemption or approval indicated in OPS 3.1165(b)(1) or (2) is in addition to that indicated by OPS 3.1155.

3. Operators that are approved to transport dangerous goods as cargo need to meet additional requirements. In addition to the operational requirements contained in Subpart R, there are other requirements in CAR DG and in the Technical Instructions that also need to be complied with.

4. Recurrent training must be provided within 24 months of previous training, except as otherwise provided by the Technical Instructions.

5. Details of the dangerous goods training programme, including the policies and procedures regarding third-party personnel involved in the acceptance, handling, loading and unloading of dangerous goods cargo, should be included in the operations manual.

6. The Technical Instructions require that operators provide information in the operations manual, and/or other appropriate manuals that will enable flight crews, other employees and ground handling agents to carry out their responsibilities with regard to the transport of dangerous goods, and that initial training be conducted prior to performing a job function involving dangerous goods.

7. Operators may seek specific approval to transport, as cargo, specific dangerous goods only, such as dry ice, biological substance, Category B, COMAT and dangerous goods in excepted quantities.

8. Attachment 1 to Part S-7; 7 of the Supplement to the Technical Instructions contains additional guidance and information on requirements regarding operators not approved to transport dangerous goods as cargo and for operators that are approved to transport dangerous goods as cargo.

9. All operators should develop and implement a system that ensures they will remain current with regulatory changes and updates. The Technical Instructions contain detailed instructions necessary for the safe transport of dangerous goods by air. These instructions are issued biennially, becoming effective on 1 January of an odd-numbered year.

AMC OPS 3.1160(a)
Scope
See OPS 3.1160(a)

1 Although the Technical Instructions use the term 'aircraft' throughout the document, the wording may suggest that the provisions are relevant only to fixed wing scheduled operations. The Technical Instructions contain all the information which is relevant to the transport of dangerous goods by air, irrespective of what type of aircraft is used and in what circumstances.

2 Unless the wording in the Technical Instructions makes it otherwise apparent, all the provisions of the Technical Instructions apply on every occasion when dangerous goods are carried by helicopter. Dangerous goods may be carried other than in accordance with the Technical Instructions only when:

a They have been exempted under OPS 3.1165(b)(1); or

b. An approval has been issued under OPS 3.1175 or 3.1210; or

c. The Authority has specified different markings under OPS 3.1180(b).

AMC OPS 3.1160(b)(1)
Dangerous Goods on a Helicopter in Accordance with the Relevant Regulations or for Operating Reasons
See OPS 3.1160(b)(1)

1 Dangerous goods required to be on board a helicopter in accordance with the relevant CARs or for operating reasons are those which are for:

a. The airworthiness of the helicopter;

b. The safe operation of the helicopter; or

c. The health of passengers or crew.

2 Such dangerous goods include but are not limited to:

a. Batteries;

b. Fire extinguishers;

c. First-aid kits;

d. Insecticides/Air fresheners;

e. Lifesaving appliances; and

f. Portable oxygen supplies.

AMC OPS 3.1160(b)(3)
Veterinary Aid or a Humane Killer for an Animal
See OPS 3.1160(b)(3)

The dangerous goods referred to in OPS 3.1160(b)(3) may also be carried on a flight made by the same helicopter or preceding the flight on which the animal is carried and/or on a flight made by the same helicopter after that animal has been carried when it is impracticable to load or unload the goods at the time of the flight on which the animal is carried.

AMC OPS 3.1160(b)(4)
Medical Aid for a Patient
See OPS 3.1160(b)(4)

1 Gas cylinders, drugs, medicines, other medical material (such as sterilising wipes) and wet cell or lithium batteries are the dangerous goods which are normally provided for use in flight as medical aid for a patient. However, what is carried may depend on the needs of the patient. These dangerous goods are not those which are a part of the normal equipment of the helicopter.

2 The dangerous goods referred to in paragraph 1 above may also be carried on a flight made by the same helicopter to collect a patient or after that patient has been delivered when it is impracticable to load or unload the goods at the time of the flight on which the patient is carried.

AMC OPS 3.1160(b)(5)
Scope - Dangerous Goods carried by Passengers or Crew
See OPS 3.1160(b)(5)

1 The Technical Instructions exclude some dangerous goods from the requirements normally applicable to them when they are carried by passengers or crew members, subject to certain conditions.

2 For the convenience of operators who may not be familiar with the Technical Instructions, these requirements are repeated below.

3 The dangerous goods which each passenger or crew member can carry are:

a. Alcoholic beverages containing more than 24% but not exceeding 70% alcohol by volume, when in retail packaging not exceeding 5 litres and with a total not exceeding 5 litres per person.

b. Non-radioactive medicinal or toilet articles (including aerosols, hair sprays, perfumes, medicines containing alcohol); and, in checked baggage only, aerosols which are non-flammable, non-toxic and without subsidiary risk, when for sporting or home use. The net quantity of each single article should not exceed 0.5 litre or 0.5 kg and the total net quantity of all articles should not exceed 2 litres or 2 kg;

c. Safety matches or a lighter for the person's own use and when carried on him. 'Strike anywhere' matches, lighters containing unabsorbed liquid fuel (other than liquefied gas), lighter fuel and lighter refills are not permitted;

d. A hydrocarbon gas-powered hair curler, providing the safety cover is securely fitted over the heating element. Gas refills are not permitted;

e. Small carbon dioxide gas cylinders worn for the operation of mechanical limbs and spare cylinders of similar size if required to ensure an adequate supply for the duration of the journey;

f. Radioisotopic cardiac pacemakers or other devices (including those powered by lithium batteries) implanted in a person, or radio-pharmaceuticals contained within the body of a person as a result of medical treatment;

g. A small medical or clinical thermometer containing mercury, for the person's own use, when in its protective case;

h. Dry ice, when used to preserve perishable items, providing the quantity of dry ice does not exceed 2 kg and the package permits the release of the gas. Carriage may be in carry-on (cabin) or checked baggage, but when in checked baggage the operator's agreement is required;

i. When carriage is allowed by the operator, small gaseous oxygen or air cylinders for medical use;

j. When carriage is allowed by the operator, not more than two small carbon dioxide cylinder fitted into a self-inflating life-jacket and not more than two spare cylinder;

k. When carriage is allowed by the operator, wheelchairs or other battery-powered mobility aids with non-spillable batteries, providing the equipment is carried as checked baggage. The battery should be securely attached to the equipment, be disconnected and the terminals insulated to prevent accidental short circuits;

l. When carriage is allowed by the operator, wheelchairs or other battery-powered mobility aids with spillable batteries, providing the equipment is carried as checked baggage. When the equipment can be loaded, stowed, secured and unloaded always in an upright position, the battery should be securely attached to the equipment, be disconnected and the terminals insulated to prevent accidental short circuits. When the equipment cannot be kept upright, the battery should be removed and carried in a strong, rigid packaging, which should be leak-tight and impervious to battery fluid. The battery in the packaging should be protected against accidental short circuits, be held upright and be surrounded by absorbent material in sufficient quantity to absorb the total liquid contents. The package containing the battery should have on it 'Battery wet, with wheelchair' or 'Battery wet, with mobility aid', bear a 'Corrosives' label and be marked to indicate its correct orientation. The package should be protected from upset by securement in the cargo compartment of the helicopter. The commander should be informed of the location of a wheelchair or mobility aid with an installed battery or of a packed battery;

m. When carriage is allowed by the operator, cartridges for sporting weapons, providing they are in Division 1.4S (See Note), they are for that person's own use, they are securely boxed and in quantities not exceeding 5 kg gross mass and they are in checked baggage. Cartridges with explosive or incendiary projectiles are not permitted;

Note: Division 1.4S is a classification assigned to an explosive. It refers to cartridges which are packed or designed so that any dangerous effects from the accidental functioning of one or more cartridges in a package are confined within the package unless it has been degraded by fire, when the dangerous effects are limited to the extent that they do not hinder firefighting or other emergency response efforts in the immediate vicinity of the package. Cartridges for sporting use are likely to be within Division 1.4S.

n. When carriage is allowed by the operator, a mercurial barometer or mercurial thermometer in carry-on (cabin) baggage when in the possession of a representative of a government weather bureau or similar official agency. The barometer or thermometer should be packed in a strong packaging having inside a sealed inner liner or bag of strong leak-proof and puncture resistant material impervious to mercury closed in such a way as to prevent the escape of mercury from the package irrespective of its position. The commander should be informed when such a barometer or thermometer is to be carried;

o. When carriage is allowed by the operator, heat producing articles (i.e. battery operated equipment, such as under-water torches and soldering equipment, which if accidentally activated will generate extreme heat which can cause a fire), providing the articles are in carry-on (cabin) baggage. The heat producing component or energy source should be removed to prevent accidental functioning;

AMC OPS 3.1165(b)(1)
States Concerned with Exemptions
See OPS 3.1165(b)(1)

1 The Technical Instructions provide that in certain circumstances dangerous goods, which are normally forbidden on a helicopter, may be carried. These circumstances include cases of extreme urgency or when other forms of transport are inappropriate or when full compliance with the prescribed requirements is contrary to the public interest. In these circumstances all the States concerned may grant exemptions from the provisions of the Technical Instructions provided that every effort is made to achieve an overall level of safety which is equivalent to that provided by the Technical Instructions.

2 The States concerned are those of origin, transit, overflight and destination of the consignment and that of the operator.

3 Where the Technical Instructions indicate that dangerous goods which are normally forbidden may be carried with an approval, the exemption procedure does not apply.

4 The exemption required by OPS 3.1165(b)(1) is in addition to the approval required by OPS 3.1155.

AMC OPS 3.1175
Packing
See OPS 3.1175

1 The Technical Instructions detail the packaging which may be used to pack dangerous goods and the quantities allowed in the packaging. In general the packaging are those which are described as 'specification packaging' in that the Technical Instructions set down both specifications and testing for them; they bear UN specification packaging markings on them.

2 However, there may be some circumstances when it is impractical or impossible to use UN specification packaging, such as when dangerous goods are being carried from an off-shore oil or gas rig. In these circumstances, whenever possible, the provisions for limited quantities of dangerous goods as detailed in the Technical Instructions should be used.

3 If it is not possible to use either UN specification packaging or the limited quantity provisions of the Technical Instructions, the Competent Authority may issue an exemption from the requirements of the Technical Instructions to allow the use of other packaging, providing an equivalent level of safety is achieved.

4 An equivalent level of safety can be achieved if the packaging used comply with Part 3; 1.1 of the Technical Instructions, (except where this makes reference to the need for the packaging to comply with requirements in Part 7 of those Instructions) and they are capable of withstanding a 1·8 m drop test onto a rigid, non-resilient, flat and horizontal surface. This level of safety may also be achieved if the dangerous goods conform to the requirements of the;

a. International Maritime Dangerous Goods Code,

b. the Regulations for the International Carriage of Dangerous Goods by Rail (RID Regulations),

c. the European Agreement on the International Carriage of Dangerous Goods by Road (ADR Regulations); or

d. the European provisions for the International Carriage of Dangerous Goods by Inland Waterway (ADN Regulations).

5 The quantities should not exceed those specified in the relevant packing instruction for the type of packaging used (e.g. fibreboard box, metal drum).

AMC OPS 3.1180(b)
Marking
See OPS 3.1180(b)

If it is impractical or unreasonable to require that all the markings specified by the Technical Instructions appear on packages of dangerous goods, the Competent Authority may issue an exemption from the requirements of those Instructions to allow markings to be omitted when their appearance would not contribute to the level of safety. In such circumstances it should be ensured that the flight crew members are given sufficient information before a flight so they can identify the dangerous goods.

AMC OPS 3.1210(a)
Loading Restrictions
See OPS 3.1210(a)

1 On the occasions when it is not possible or reasonable to apply the full loading restrictions of the Technical Instructions to helicopters, the Competent Authority may grant an exemption from the normal requirements to allow dangerous goods to be carried on the same helicopter as passengers.

2 An exemption should only be issued when there is an essential reason for doing so. The dangerous goods may be carried in the cabin, in accessible cargo areas behind the cabin or under the cabin floor or in panniers affixed to the outside of the helicopter. The requirements in Part 5; Chapter 2 of the Technical Instructions, concerning the segregation of incompatible dangerous goods, shall be met at all times. Where radioactive materials are to be carried, the separation distances set down in Part 5; Chapter 2 shall be met, except that the distance shall be measured from the nearest point occupied by a passenger to the surface of the package, overpack or freight container containing the radioactive material.

AMC OPS 3.1215(b)
Provision of Information
See OPS 3.1215(b)

1 *Information to Passengers*

1.1 Information to passengers should be promulgated in such a manner that passengers are warned as to the types of dangerous goods that must not be carried on board a helicopter.

1.2 As a minimum, this information should consist of:

a. Warning notices or placards sufficient in number and prominently displayed, at each of the places at an airport where tickets are issued and passengers checked in, in helicopter boarding areas and at any other place where passengers are checked in; and

b. A warning with the passenger ticket. This may be printed on the ticket or on a ticket wallet or on a leaflet.

1.3 The information to passengers may include reference to those dangerous goods which may be carried.

2 *Information to Other Persons*

2.1 Information to persons offering cargo for transport by air should be promulgated in such a manner that those persons are warned as to the need to properly identify and declare dangerous goods.

2.2 As a minimum this information should consist of warning notices or placards sufficient in number and prominently displayed at any location where cargo is accepted.

3 *General*

3.1 Information should be easily understood and identify that there are various classes of dangerous goods.

3.2 Pictographs may be used as an alternative to providing written information or to supplement such information.

AMC OPS 3.1215(e)
Information in the Event of a Helicopter Incident or Accident
See OPS 3.1215(e)

The information to be provided should include the proper shipping name, UN/ID number, class, subsidiary risk(s) for which labels are required, the compatibility group for Class 1 and the quantity and location on board the helicopter.

AMC OPS 3.1220
Training
See OPS 3.1220

1 Application for Approval of Training Programmes. Applications for approval of training programmes should indicate how the training will be carried out. Training intended to give general information and guidance may be by any means including handouts, leaflets, circulars, slide presentations, videos, etc., and may take place on-the-job or off-the-job. Training intended to give in-depth and detailed appreciation of the whole subject or particular aspects of it should be by formal training courses, which should include a written examination the successful passing of which will result in the issue of the proof of qualification. Applications for formal training courses should include the course objectives, the training programme syllabus/curricula and examples of the written examination to be undertaken.

2 Instructors. Instructors should have knowledge not only of training techniques but also of the transport of dangerous goods by air, in order that the subject be covered fully and questions adequately answered.

3 Areas of training. The areas of training given in Tables 1 and 2 of OPS 3.1220 are applicable whether the training is for general information and guidance or to give an in-depth and detailed appreciation. The extent to which any area of training should be covered is dependent upon whether it is for general information or to give in-depth appreciation. Additional areas not identified in Tables 1 and 2 may be needed, or some areas omitted, depending on the responsibilities of the individual.

4 Levels of Training

4.1 There are two levels of training:

a. Where it is intended to give an in-depth and a detailed appreciation of the whole subject or of the area(s) being covered, such that the person being trained gains in knowledge so as to be able to apply the detailed requirements of the Technical Instructions. This training should include establishing, by means of a written examination covering all the areas of the training programme, that a required minimum level of knowledge has been acquired; or

b. Where it is intended to give general information and guidance about the area(s) being covered, such that the person being trained receives an overall awareness of the subject. This training should include establishing by means of a written or oral examination covering all areas of the training programme, that a required minimum level of knowledge has been acquired.

4.2 In the absence of other guidance, the staff referred to in OPS 3.1220(c)(1) should receive training to the extent identified in sub-paragraph 4.1.a, above; all other staff referred to in OPS 3.1220(b) and (c) should receive training to the extent identified in sub-paragraph 4.1.b above. However, where flight crew or other crew members, such as loadmasters, are responsible for checking the dangerous goods to be loaded, their training should also be to the extent identified in paragraph 4.1.a, above.

5 Training in Emergency Procedures. The training in emergency procedures should include as a minimum:

a. For those personnel covered by OPS 3.1220(b) and (c), except for crew members whose emergency procedures training is covered in sub-paragraphs 5b or 5c (as applicable) below:

i. Dealing with damaged or leaking packages; and

ii. Other actions in the event of ground emergencies arising from dangerous goods.

b. For flight crew members:

i. Actions in the event of emergencies in flight occurring in the passenger cabin or in the cargo compartments; and

ii. The notification to Air Traffic Services should an in-flight emergency occur. (See OPS 3.420(e).)

c. For crew members other than flight crew members:

i. Dealing with incidents arising from dangerous goods carried by passengers; or

ii. Dealing with damaged or leaking packages in flight.

6 Recurrent training. Recurrent training should cover the areas in Table 1 or Table 2 relevant to initial Dangerous Goods training unless the responsibility of the individual has changed.

7. Test to verify understanding. It is necessary to have some means of establishing that a person has gained in understanding as a result of training; this is achieved by requiring the person to undertake a test. The complexity of the test, the manner of conducting it and the questions asked should be commensurate with the duties of the person being trained; and the test should demonstrate that the training has been adequate. If the test is completed satisfactorily a certificate should be issued confirming this.

AMC OPS 3.1220
Training
See OPS 3.1220

1 Areas of Training. The areas of training identified in Tables 1 and 2 of OPS 3.1220 are applicable whether the training is:

a. For general information and guidance; or

b. To give an in-depth and detailed appreciation of the subject.

1.1 The extent to which the training should be covered and whether areas not identified in Table 1 or Table 2 need to be added or the identified areas varied, is dependent on the responsibilities of the person being trained. In particular, if a crew member is a loadmaster the appropriate areas of training required may be those in column 4 of Table 2 and not those in column 5. Also, if the operator carries only cargo, those areas relating to passengers and their baggage may be omitted from the training.

2 How to Achieve Training

2.1 Training providing general information and guidance is intended to give a general appreciation of the requirements for the transport by air of dangerous goods. It may be achieved by means of handouts, leaflets, circulars, slide presentations, videos, etc., or a mixture of several of these means. The training does not need to be given by a formal training course and may take place 'on-the-job' or 'off-the-job'.

2.2 Training providing in-depth guidance and a detailed appreciation of the whole subject or particular areas of it is intended to give a level of knowledge necessary for the application of the requirements for the transport by air of dangerous goods. It should be given by a formal training course which takes place at a time when the person is not undertaking normal duties. The course may be by means of tuition or as a self-study programme or a mixture of both of these. It should cover all the areas of dangerous goods relevant to the person receiving the training, although areas not likely to be relevant may be omitted (for instance, training in the transport of radioactive materials may be excluded where they will not be carried by the operator).

AMC OPS 3.1225
Dangerous Goods Incident and Accident Reports
See OPS 3.1225

1 Any type of dangerous goods incident or accident should be reported, irrespective of whether the dangerous goods are contained in cargo, mail, passengers' baggage or crew baggage. The finding of undeclared or mis-declared dangerous goods in cargo, mail or baggage should also be reported.

2 Initial reports may be made by any means, but in all cases a written report should be made as soon as possible.

3 The report should be as precise as possible and contain all data known at the time the report is made, for example:

a. Date of the incident or accident, or the finding of undeclared or mis-declared dangerous goods;

b. Location, the flight number and flight date, if applicable;

c. Description of the goods and the reference number of the air waybill, pouch, baggage tag, ticket, etc.;

d. Proper shipping name (including the technical name, if appropriate) and UN/ID number, where known;

e. Class or division and any subsidiary risk;

f. Type of packaging, if applicable, and the packaging specification marking on it;

g. Quantity involved;

h. Name and address of the shipper, passenger, etc.;

i. Any other relevant details;

j. Suspected cause of the incident or accident;

k. Action taken;

l. Any other reporting action taken; and

m. Name, title, address and contact number of the person making the report.

4 Copies of the relevant documents and any photographs taken should be attached to the report.