ICAO

International Standards
and Recommended Practices

Annex 6 to the Convention on International Civil Aviation

Operation of Aircraft

Part III — International Operations — Helicopters

Eleventh Edition, July 2022

This edition supersedes, on 3 November 2022, all previous editions of Part III of Annex 6.

For information regarding the applicability of the Standards and Recommended Practices, see the Foreword.

INTERNATIONAL CIVIL AVIATION ORGANIZATION

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AMENDMENTS

Amendments are announced in the supplements to the *Products and Services Catalogue;* the Catalogue and its supplements are available on the ICAO website at www.icao.int. The space below is provided to keep a record of such amendments.

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ABBREVIATIONS AND SYMBOLS

(used in this Annex)

Abbreviations

ACAS	Airborne collision avoidance systems
ADRS	Aircraft data recording system
ADS-C	Automatic dependent surveillance — contract
AFCS	Automatic flight control system
AIR	Airborne image recorder
AIRS	Airborne image recording system
AOC	Air operator certificate
APCH	Approach
AR	Authorization required
ATC	Air traffic control
ATM	Air traffic management
ATN	Aeronautical telecommunication network
ATS	Air traffic services
CAA	Civil Aviation Authority
CARS	Cockpit audio recording system
CAT I	Category I
CAT II	Category II
CAT III	Category III
CFIT	Controlled flight into terrain
cm	Centimetre
COMAT	Operator material
CPDLC	Controller-pilot data link communications
CVR	Cockpit voice recorder
CVS	Combined vision system
DA	Decision altitude
DA/H	Decision altitude/height
DH	Decision height
DLR	Data link recorder
DLRS	Data link recording system
DME	Distance measuring equipment
EFB	Electronic flight bag
EFIS	Electronic flight instrument system
EGT	Exhaust gas temperature
EICAS	Engine indication and crew alerting system
ELT	Emergency locator transmitter
ELT(AD)	Automatic deployable ELT
ELT(AF)	Automatic fixed ELT
ELT(AP)	Automatic portable ELT
ELT(S)	Survival ELT
EPR	Engine pressure ratio

EUROCAE	European Organisation for Civil Aviation Equipment
EVS	Enhanced vision system
FANS	Future air navigation system
FATO	Final approach and take-off area
FDR	Flight data recorder
FM	Frequency modulation
ft	Foot
g	Normal acceleration
hPa	Hectopascal
HUD	Head-up display
IFR	Instrument flight rules
IGE	In ground effect
ILS	Instrument landing system
IMC	Instrument meteorological conditions
inHg	Inch of mercury
kg	Kilogram
km	Kilometre
kN	Kilonewton
kt	Knot
LDAH	Landing distance available
LDP	Landing decision point
LDRH	Landing distance required
LED	Light emitting diode
m	Metre
mb	Millibar
MDA	Minimum descent altitude
MDA/H	Minimum descent altitude/height
MDH	Minimum descent height
MEL	Minimum equipment list
MHz	Megahertz
MLS	Microwave landing system
MMEL	Master minimum equipment list
MOPS	Minimum operational performance specification
N_1	Low pressure compressor speed (two-stage compressor); fan speed (three-stage compressor)
NM	Nautical mile
NVIS	Night vision imaging systems
OCA	Obstacle clearance altitude
OCA/H	Obstacle clearance altitude/height
OCH	Obstacle clearance height
OEI	One-engine-inoperative
OGE	Out of ground effect

PANS	Procedures for Air Navigation Services
PBC	Performance-based communication
PBN	Performance-based navigation
PBS	Performance-based surveillance
PNR	Point of no return
psi	Pound per square inch
R	Rotor radius
RCP	Required communication performance
RNAV	Area navigation
RNP	Required navigation performance
RSP	Required surveillance performance
RTCA	Radio Technical Commission for Aeronautics
RVR	Runway visual range
SI	International System of Units
SOP	Standard operating procedure
SVS	Synthetic vision system
T_4	Engine exhaust gas temperature
TDP	Take-off decision point
TIT	Turbine inlet temperature
TLOF	Touchdown and lift-off area
TODAH	Take-off distance available
TODRH	Take-off distance required
UTC	Coordinated Universal Time
VFR	Visual flight rules
VMC	Visual meteorological conditions
VNAV	Vertical navigation
V_{TOSS}	Take-off safety speed
V_y	Best rate of climb speed

Symbols

°C	Degrees Celsius
%	Per cent

PUBLICATIONS

(referred to in this Annex)

ICAO Publications

Convention and Related Acts

Convention on International Civil Aviation (Doc 7300)

Protocol Relating to an Amendment to the Convention on International Civil Aviation (Article 83 bis*)* (Doc 9318)

Annexes to the Convention on International Civil Aviation

Annex 1 — *Personnel Licensing*

Annex 2 — *Rules of the Air*

Annex 3 — *Meteorological Service for International Air Navigation*

Annex 4 — *Aeronautical Charts*

Annex 5 — *Units of Measurement to be Used in Air and Ground Operations*

Annex 6 — *Operation of Aircraft*
Part I — *International Commercial Air Transport — Aeroplanes*
Part II — *International General Aviation — Aeroplanes*

Annex 8 — *Airworthiness of Aircraft*

Annex 9 — *Facilitation*

Annex 10 — *Aeronautical Telecommunications*
Volume II — *Communication Procedures including those with PANS status*
Volume III — *Communication Systems* (Part I — *Digital Data Communication Systems;* Part II — *Voice Communication Systems*)
Volume IV — *Surveillance and Collision Avoidance Systems*

Annex 11 — *Air Traffic Services*

Annex 12 — *Search and Rescue*

Annex 13 — *Aircraft Accident and Incident Investigation*

Annex 14 — *Aerodromes*
Volume I — *Aerodrome Design and Operations*
Volume II — *Heliports*

Annex 15 — *Aeronautical Information Services*

Annex 16 — *Environmental Protection*
Volume I — *Aircraft Noise*

Annex 18 — *The Safe Transport of Dangerous Goods by Air*

Annex 19 — *Safety Management*

Procedures for Air Navigation Services

ATM — Air Traffic Management (Doc 4444)

MET — Meteorology (Doc 10157)

OPS — Aircraft Operations (Doc 8168)
Volume I — *Flight Procedures*
Volume II — *Construction of Visual and Instrument Flight Procedures*

TRG — Training (Doc 9868)

Regional Supplementary Procedures (Doc 7030)

Manuals[1]

Aeronautical Surveillance Manual (Doc 9924)

Airport Services Manual (Doc 9137)
Part 1 — *Rescue and Fire Fighting*
Part 8 — *Airport Operational Services*

Airworthiness Manual (Doc 9760)

Cabin Crew Safety Training Manual (Doc 10002)

Emergency Response Guidance for Aircraft Incidents Involving Dangerous Goods (Doc 9481)

Flight Planning and Fuel Management (FPFM) Manual (Doc 9976)

Helicopter Code of Performance Development Manual (Doc 10110)

Human Factors Training Manual (Doc 9683)

Manual for the Oversight of Fatigue Management Approaches (Doc 9966)

Manual of Aircraft Ground De-icing/Anti-icing Operations (Doc 9640)

Manual of All-Weather Operations (Doc 9365)

1. The manuals referenced will be updated as necessary to harmonize the terminology with that used in the new Annex 19.

Manual of Criteria for the Qualification of Flight Simulation Training Devices (Doc 9625)
Volume II — *Helicopters*

Manual of Evidence-based Training (Doc 9995)

Manual of Procedures for Operations Inspection, Certification and Continued Surveillance (Doc 8335)

Manual of Procedures for Establishment and Management of a State's Personnel Licensing System (Doc 9379)

Manual on Electronic Flight Bags (EFBs) (Doc 10020)

Manual on Flight and Flow — Information for a Collaborative Environment (FF-ICE) (Doc 9965)

Manual on Flight Data Analysis Programmes (FDAP) (Doc 10000)

Manual on the Implementation of Article 83 bis *of the Convention on International Civil Aviation* (Doc 10059)

Performance-based Communication and Surveillance (PBCS) Manual (Doc 9869) (previously titled the *Manual on Required Communication Performance (RCP)*

Performance-based Navigation (PBN) Manual (Doc 9613)

Policy and Guidance Material on the Economic Regulation of International Air Transport (Doc 9587)

Preparation of an Operations Manual (Doc 9376)

Safety Management Manual (Doc 9859)

Technical Instructions for the Safe Transport of Dangerous Goods by Air (Doc 9284)

Training Manual (Doc 7192)
Part D-3 — *Flight Operations Officers/Flight Dispatchers*

Other Publications

European Organisation for Civil Aviation Equipment (EUROCAE) Documents ED-55, ED-56A, ED-112, ED-112A and ED-155

ANNEX 6 — PART III
INTERNATIONAL OPERATIONS — HELICOPTERS

FOREWORD

Historical background

Standards and Recommended Practices for the Operation of Aircraft were first adopted by the Council, pursuant to the provisions of Article 37 of the Convention on International Civil Aviation (Chicago 1944), on 10 December 1948 for International Air Transport and on 2 December 1968 for International General Aviation. The documents containing these Standards and Recommenced Practices are now designated as Annex 6, Parts I and II, respectively, to the Convention. In general, Parts I and II address aeroplane operations; neither part is specifically applicable to helicopter operations.

Therefore, Part III was introduced as a means of including provisions for helicopter operations. Initially, provisions related to flight data recorders and cockpit voice recorders for helicopters were developed by the Air Navigation Commission following Recommendation 10/1 of the Accident Prevention and Investigation Meeting AIG (1979) and adopted by the Council on 14 March 1986. They became effective on 27 July 1986 and applicable on 20 November 1986. Subsequently, proposals for comprehensive Standards and Recommended Practices covering other aspects of helicopter operations were developed with the assistance of the Helicopter Operations Panel; these provisions, incorporated in Amendment 1, were adopted by the Council on 21 March 1990. The amendment became effective on 30 July 1990 and applicable on 15 November 1990.

Table A shows the origin of subsequent amendments together with a list of the principal subjects involved and the dates on which the Annex and the amendments were adopted by the Council, when they became effective and when they became applicable.

Applicability

The Standards and Recommended Practices included in Annex 6 — *Operation of Aircraft*, Parts I and II cover the operation of all aeroplanes in international civil aviation, except where specifically excluded. Similarly, the Standards and Recommended Practices in Annex 6, Part III cover the operation of all helicopters in international civil aviation, general aviation as well as commercial air transport operations.

Action by Contracting States

Notification of differences. The attention of Contracting States is drawn to the obligation imposed by Article 38 of the Convention by which Contracting States are required to notify the Organization of any differences between their national regulations and practices and the International Standards contained in this Annex and any amendments thereto. Contracting States are invited to extend such notification to any differences from the Recommended Practices contained in this Annex, and any amendments thereto, when the notification of such differences is important for the safety of air navigation. Further, Contracting States are invited to keep the Organization currently informed of any differences which may subsequently occur

or of the withdrawal of any differences previously notified. A specific request for notification of differences will be sent to Contracting States immediately after the adoption of each Amendment to this Annex.

Attention of States is also drawn to the provision of Annex 15 related to the publication of differences between their national regulations and practices and the related ICAO Standards and Recommended Practices through the Aeronautical Information Service, in addition to the obligation of States under Article 38 of the Convention.

Promulgation of information. The establishment and withdrawal of, and changes to, facilities, services and procedures affecting aircraft operations provided in accordance with the Standards and Recommended Practices specified in this Annex should be notified and take effect in accordance with the provisions of Annex 15.

Status of Annex components

An Annex is made up of the following component parts, not all of which, however, are necessarily found in every Annex; they have the status indicated.

1. — *Material comprising the Annex proper*

a) *Standards* and *Recommended Practices* adopted by the Council under the provisions of the Convention. They are defined as follows:

Standard: Any specification for physical characteristics, configuration, matériel, performance, personnel or procedure, the uniform application of which is recognized as necessary for the safety or regularity of international air navigation and to which Contracting States will conform in accordance with the Convention; in the event of impossibility of compliance, notification to the Council is compulsory under Article 38 of the convention.

Recommended Practice: Any specification for physical characteristics, configuration, matériel, performance, personnel or procedure, the uniform application of which is recognized as desirable in the interest of safety, regularity or efficiency of international air navigation, and to which Contracting States will endeavour to conform in accordance with the Convention.

b) *Appendices* comprising material grouped separately for convenience but forming part of the Standards and Recommended Practices adopted by the Council.

c) *Definitions* of terms used in the Standards and Recommended Practices which are not self-explanatory in that they do not have accepted dictionary meanings. A definition does not have an independent status but is an essential part of each Standard and Recommended Practice in which the term is used, since a change in the meaning of the term would affect the specification.

d) *Tables* and *Figures* which add to or illustrate a Standard or Recommended Practice and which are referred to therein, form part of the associated Standard or Recommended Practice and have the same status.

It is to be noted that some Standards in this Annex may incorporate, by reference, other specifications having the status of Recommended Practices. In such case, the text of the Recommended Practice becomes part of the Standard.

2. — *Material approved by the Council for publication in association with the Standards and Recommended Practices*

a) *Forewords* comprising historical and explanatory material based on the action of the Council and including an explanation of the obligations of States with regard to the application of the Standards and Recommended Practices ensuing from the Convention and the Resolution of Adoption;

b) *Introductions* comprising explanatory material introduced at the beginning of parts, chapters or sections of the Annex to assist in the understanding of the application of the text;

c) *Notes* included in the text, where appropriate, to give factual information or references bearing on the Standards or Recommended Practices in question but not constituting part of the Standards or Recommended Practices;

d) *Attachments* comprising material supplementary to the Standards and Recommended Practices or included as a guide to their application.

Selection of language

This Annex has been adopted in six languages — English, Arabic, Chinese, French, Russian and Spanish. Each Contracting State is requested to select one of those texts for the purpose of national implementation and for other effects provided for in the Convention, either through direct use or through translation into its own national language, and to notify the Organization accordingly.

Editorial practices

The following practice has been adhered to in order to indicate at a glance the status of each statement: *Standards* have been printed in light face roman; *Recommended Practices* have been printed in light face italics, the status being indicated by the prefix **Recommendation**; *Notes* have been printed in light face italics, the status being indicated by the prefix *Note.*

The following editorial practice has been followed in the writing of specifications: for Standards the operative verb "shall" is used, and for Recommended Practices the operative verb "should" is used.

The units of measurement used in this document are in accordance with the International System of Units (SI) as specified in Annex 5 to the Convention on International Civil Aviation. Where Annex 5 permits the use of non-SI alternative units, these are shown in parentheses following the basic units. Where two sets of units are quoted, it must not be assumed that the pairs of values are equal and interchangeable. It may, however, be inferred that an equivalent level of safety is achieved when either set of units is used exclusively.

Any reference to a portion of this document, which is identified by a number and/or title, includes all subdivisions of that portion.

In order to maintain a comprehensive edition of this Annex, the latest amendments have been consolidated in a new edition of the Annex. In so doing, provisions with particular applicability dates have been adjusted editorially, as appropriate.

Table A. Amendments to Annex 6, Part III

Amendment	*Source*	*Subject(s)*	*Adopted Effective Applicable*
1st Edition	Accident Prevention and Investigation Divisional Meeting AIG (1979)	Provisions for flight recorders in helicopters.	14 March 1986 27 July 1986 20 November 1986
1 (2nd Edition)	Fourth meeting of the Helicopter Operations Panel. Amendments consequential to 1990 amendments to Annex 6, Parts I and II. Air Navigation Commission — directed studies	a) Introduction of provisions pertaining to helicopter operations, similar in scope to those contained in Annex 6, Parts I and II, for aeroplanes. These provisions, together with the flight recorder provisions previously introduced in the First Edition of Annex 6, Part III, complete the initial development of Standards and Recommended Practices for helicopter operations; b) introduction of provisions pertaining to the air operator certificate, minimum equipment lists, the operations manual, and some new definitions. These provisions serve to preserve the parallelism among the three parts of Annex 6; c) introduction of guidance material concerning recording on FDRs of operational flight information for those helicopters equipped with electronic displays.	21 March 1990 30 July 1990 15 November 1990
2	Fifth meeting of the Operations Panel, Eighth meeting of the Review of the General Concept of Separation Panel, Accident Investigation Divisional Meeting (AIG/1992), Air Navigation Commission studies	a) Revision of definitions of heliport operating minima, decision altitude/height, minimum descent altitude/height and introduction of definition of obstacle clearance altitude/height; b) introduction of new definitions for emergency locator transmitters (ELTs), required navigation performance (RNP) and RNP type; c) introduction of a requirement concerning the use of engraving metal foil flight data recorders; d) introduction of carriage requirements for emergency locator transmitters (ELTs) to replace provisions regarding survival radio equipment and emergency location beacon; e) introduction of a requirement that the navigation equipment carried shall enable the aircraft to proceed in accordance with RNP types prescribed for the intended route(s) or areas(s).	21 March 1994 25 July 1994 10 November 1994
3 (3rd Edition)	Air Navigation Commission studies, Fourteenth meeting of the Dangerous Goods Panel, editorial amendment, text alignment with Annex 6, Part I and/or Part II, consequential amendment	a) Introduction of new and revised definitions; b) new provisions concerning accident prevention and flight safety programmes; c) revision of the provisions concerning operating facilities, in-flight simulation of emergency situations, minimum flight altitudes, flight time, flight duty periods and rest periods for crew members, flight preparation, oxygen supply, flight crew members at duty stations, duties of flight operations officers and new provisions for carry-on baggage; d) revision of provisions concerning mass limitations and medical supplies; e) new provisions related to oxygen equipment, revision of the provisions for helicopters operated in accordance with the visual flight rules (VFR) and the instrument flight rules (IFR);	10 March 1995 24 July 1995 9 November 1995

Amendment	*Source*	*Subject(s)*	*Adopted Effective Applicable*
		f) new requirements for the flight crew training programme concerning knowledge and skills related to human performance and limitations; g) revision of the denomination of flight operations officers to align with Annex 1; h) revision of the contents of the operations manual; new provisions concerning heliport operating minima, oxygen supply, flight and duty time limitations, procedures and checklists used by flight crew, specifications for the operational flight plan, the flight crew training programme, the cabin attendant duties training programme, security instruction and guidance, accident prevention and flight safety programme, departure contingency procedures and instructions for mass and balance control; i) new provisions on flight time, flight duty periods and rest periods for cabin attendants and revision of the provisions concerning training; j) revision of the provisions concerning first-aid medical supplies; and k) new provisions concerning the minimum equipment list (MEL).	
4	Fourth meeting of the Secondary Surveillance Radar Improvements and Collision Avoidance Systems Panel (SICASP/4)	Requirement for helicopters to be equipped with pressure-altitude reporting transponders.	19 February 1996 15 July 1996 7 November 1996
5 (4th Edition)	First meeting of the Flight Recorder Panel, ICAO and Industry CFIT Task Force, Air Navigation Commission studies, Amendment 162 to Annex 1, Amendment 38 to Annex 11, editorial amendment	a) Introduction of new and revised definitions for aircraft operating manual, configuration deviation list, Human Factors principles, human performance, master minimum equipment list, psychoactive substances and required navigation performance; b) revision of the notes concerning lease and interchange; c) introduction of a note concerning the use of psychoactive substances; d) new and revised requirements concerning flight recorders; e) new and revised provisions concerning the content of an operations manual relocated in an appendix; f) new provisions concerning the responsibility of States with regard to supervision of operations subject to an air operator certificate, acceptance of an operations manual and establishment of a system for certification and continued surveillance of the operator; g) new provisions related to the de/anti-icing of aircraft on the ground, aeroplane performance operating limitations, mass limitations, sensitive pressure altimeters and recent experience of the co-pilot; h) revised provisions concerning pressure-altitude reporting transponders; and i) new provisions concerning Human Factors.	20 March 1998 20 July 1998 5 November 1998

Amendment	*Source*	*Subject(s)*	*Adopted Effective Applicable*
6	Second meeting of the Flight Recorder Panel, 32nd Session of the Assembly, Air Navigation Commission studies	a) Change of terminology from "cabin attendant" to "cabin crew"; b) revised definitions; and c) new provisions concerning the mandatory carriage of ELTs operating on 406 MHz and 121.5 MHz, pressure-altitude reporting transponders and the introduction of an implementation date for the recording of digital communications.	15 March 1999 19 July 1999 4 November 1999
7	Air Navigation Commission studies	a) Revised definitions and introduction of the definition for instrument approach and landing operations; and b) introduction of requirements for the provision of RVR information and criteria for instrument approach operations, revision of the duties of the pilot-in-command.	15 March 2000 17 July 2000 2 November 2000
8 (5th Edition)	Second meeting of the Flight Recorder Panel, Third meeting of the Global Navigation Satellite System Panel, Fifth meeting of the Continuing Airworthiness Panel, Air Navigation Commission studies	a) Update the provisions concerning flight recorders, including the recording of digital communications; FDR requirements for new aircraft; revised parameter listings; introduction of two-hour-duration CVRs; b) amendment of the classification of instrument approach and landing operations; c) new provisions pertaining to approach with vertical guidance (APV) operations; d) new definitions and update of provisions pertaining to maintenance-related requirements; and e) translation in the English language for documents attesting noise certification.	12 March 2001 16 July 2001 1 November 2001
9	Separation and Airspace Safety Panel and Air Navigation Commission studies	a) New provisions concerning language proficiency requirements; b) new definition and provision concerning an operator's flight safety documents system; c) new definition and provisions concerning the safety aspects of ground handling arrangements; and d) authorization by the State of Operator or State of Registry for en-route operations in RNP airspace.	13 March 2003 14 July 2003 27 November 2003
10	Sixth meeting of the Committee on Aviation Environmental Protection	New provisions concerning references to noise certification.	9 March 2005 11 July 2005 24 November 2005
11	Second meeting of the Flight Crew Licensing and Training Panel, Fourteenth meeting of the Obstacle Clearance Panel, a proposal by the United States, Council request, 35th Session of the Assembly, and the Eleventh Air Navigation Conference	a) Pilot recent experience and proficiency check requirements, cross-crew qualification and cross-crediting of experience, evaluation of competency, threat and error management, and the biannual pilot proficiency check; b) pilot awareness of operational requirements determined by procedure design; c) qualifications for flight operations officers/flight dispatchers and the critical elements of a State regulatory system; d) the carriage of a copy of the air operator certificate in aircraft; and e) safety management provisions and references to new guidance material on the concept of acceptable level of safety.	14 March 2006 17 July 2006 23 November 2006

Amendment	*Source*	*Subject(s)*	*Adopted Effective Applicable*
12 (6th Edition)	Air Navigation Commission study, First meeting of the Operational Data Link Panel (OPLINKP/1), and Secretariat study assisted by the Helicopter Tilt-Rotor Study Group	a) Amendments to Standards to facilitate implementation of the available technology in relation to the use of automatic dependant surveillance — contract (ADS-C) and to the introduction of required communication performance (RCP) in the provision of air traffic services (ATS); b) a closer alignment of the provisions of Annex 6, Part III, with recognized regulatory practices; c) a change to the definitions of performance classes; d) a change to permit appropriate consideration for achieving a safe forced landing in the event of an engine failure for operations in performance Classes 2 and 3; e) the addition of new provisions relating to commercial operations under instrument meteorological conditions; f) a new definition of the term "operation"; g) the introduction of the concept of "offshore operations"; and h) mandatory carriage requirements for emergency locator transmitters (ELTs) as of 1 July 2008).	14 March 2007 16 July 2007 22 November 2007 1 July 2008
13	Secretariat; Secretariat with the assistance of the Required Navigation Performance and Special Operational Requirements (RNPSOR) Study Group	a) Amendments to definitions and Standards and Recommended Practices to strengthen the oversight and requirements of foreign operators and to harmonize the air operator certificate in content and, as of 1 January 2010, in layout; and b) amendments to definitions and Standards to align required navigation performance (RNP) and area navigation (RNAV) terminology with the performance-based navigation concept.	3 March 2008 20 July 2008 20 November 2008 1 January 2010
14-A	Seventh meeting of the Operations Panel (OPSP/7); Secretariat with the assistance of the Medical Provisions Study Group (MPSG)	a) Amendment to the definition of "approach and landing operations using instrument approach procedures" to show a reduced RVR requirement for CAT II and CAT IIIA and B; b) clarification of training requirements for cabin crews in the awareness of dangerous goods; c) harmonization of the provisions on the use of a simulator for the maintenance of recent experience for a helicopter pilot-in-command and co-pilot with the provisions in Annex 6, Part I; and d) amendment introducing changes to Annex 6 in order to better reflect the contemporary needs regarding on-board medical supplies.	2 March 2009 20 July 2009 19 November 2009
14-B	Secretariat	Amendment concerning the development of harmonized provisions relating to safety management by introducing a framework for the implementation and maintenance of a State safety programme as of 18 November 2010.	2 March 2009 20 July 2009 18 November 2010

Amendment	*Source*	*Subject(s)*	*Adopted* *Effective* *Applicable*
15 (7th Edition)	Ninth meeting of the Operations Panel Working Group of the Whole (OPSP/WG/WHL/9); twelfth meeting of the Airworthiness Panel Working Group of the Whole (AIRP/WG/WHL/12); Secretariat, with the assistance of the second meeting of the Flight Recorder Panel Working Group of the Whole (FLIRECP/WG/WHL/2)	a) New provisions for head-up displays (HUD)/enhanced vision systems (EVS); b) amendment to provisions to provide consistency in propulsion terminology; and c) new and updated provisions regarding flight recorders.	26 February 2010 12 July 2010 18 November 2010
16	Secretariat, in order to implement the Council mandate, pursuant to Assembly Resolution A37-9	The use of a halon replacement agent in lavatory fire extinguishers on or after 31 December 2011 and 31 December 2016 for hand-held fire extinguishers.	13 June 2011 30 October 2011 15 December 2011
17	Secretariat, with the assistance of the third meeting of the Flight Recorder Panel Working Group of the Whole (FLIRECP/WG/WHL/3)	Amendment concerning carriage requirements for flight recorders.	7 March 2012 16 July 2012 15 November 2012
18-A	Twelfth meeting of the Operations Panel Working Group of the Whole (OPSP/WG/WHL/12); Special Meeting of the Safety Management Panel (SMP/SM/1)	Amendment concerning: a) timepiece requirements and approach ban; b) the transfer of safety management provisions to Annex 19.	25 February 2013 15 July 2013 14 November 2013
18-B	Secretariat supported by the Approach Classification Task Force (ACTF) in coordination with the Aerodromes Panel (AP), the Instrument Flight Procedure Panel (IFPP), the Navigation Systems Panel (NSP) and the Operations Panel (OPSP)	Amendment concerning provisions related to instrument approach operations and procedures as a result of the new approach classification.	25 February 2013 15 July 2013 13 November 2014

Amendment	*Source*	*Subject(s)*	*Adopted* *Effective* *Applicable*
19	Seventh, eighth, ninth, tenth and eleventh meetings of the Instrument Flight Procedures Panel Working Group of the Whole (IFPP/WG-WHL/7, 8, 9, 10 and 11); fifteenth meeting of the Operations Panel Working Group of the Whole (OPSP/WG/WHL/15); fifth meeting of the Flight Recorder Panel Working Group of the Whole (FLIRECP/WG/WHL/5)	Amendment concerning: a) procedure design criteria and charting requirements to support PBN as well as helicopter PinS approach and departure operations; b) harmonization of provisions concerning EFBs, HUDs and vision systems, and fuel use; c) flight recorder requirements to: reference updated EUROCAE Minimum Operational Performance Specifications (MOPS); align underwater location device (ULD) requirements with Annex 6, Part I; and include less stringent inspection requirements for flight recorder systems.	3 March 2014 14 July 2014 13 November 2014
20-A (Eighth Edition)	First meeting of the Flight Operations Panel (FLTOPSP/1); Secretariat, with the assistance of the seventh meeting of the Flight Recorder Panel (FLIRECP/7); second meeting of the Operational Data Link Panel (OPLINKP/2)	Amendment concerning: a) harmonization and alignment of terms and language, updated performance-based navigation (PBN) provisions, and enhanced vision systems (EVS); b) airborne image recording system (AIRS); and c) performance-based communication and surveillance (PBCS).	2 March 2016 11 July 2016 10 November 2016
20-B	Group of Experts on Protection of Accident and Incident Records (GEPAIR), stemming from the work of the Safety Information Protection Task Force (SIP TF); Secretariat, as a result of the amendment to Annex 19 proposed by the first meeting of the Safety Management Panel (SMP/1) and the Safety Information Protection Task Force (SIP TF)	Amendment concerning: a) protection of flight recorder recordings in normal operations; and b) protection of safety data, safety information and related sources.	2 March 2016 11 July 2016 7 November 2019
21	39th Session of the Assembly	Amendment concerning the applicability date for halon agent replacement in portable fire extinguishers.	25 November 2016 2 February 2017 27 April 2017

Amendment	*Source*	*Subject(s)*	*Adopted/approved* *Effective* *Applicable*
22 (Ninth edition)	Third meeting of the Flight Operations Panel (FLTOPSP/3); ninth meeting of the Flight Recorder Specific Working Group (FLIRECSWG/9); third and fourth meeting of the Airworthiness Panel (AIRP/3 and AIRP/4); Helicopter Fatigue Management Task Force (Heli FM TF) and recommendation by FLTOPSP/3; and thirteenth meeting of the Instrument Flight Procedure Panel (IFPP/13)	a) Helicopter refuelling provisions b) flight recorder requirements to include: CVR and AIR erase function; additional FDR parameters to be recorded; and simplification of flight recorder provisions c) approval and global recognition of approved maintenance organizations (AMOs) (Phases I and II) and the introduction of the electronic aircraft maintenance records (EAMR) framework d) harmonization and alignment of fatigue management SARPs e) amendments as a result of the restructuring of the Procedures for Air Navigation Services — Aircraft Operations, Volume I — Flight Procedures (Doc 8168)	7 March 2018 16 July 2018 8 November 2018
23 (Tenth edition)	Fourth meeting of the Flight Operations Panel (FLTOPSP/4); and the tenth and eleventh meetings of the Flight Recorder Specific Working Group (FLIRECSWG/10 and FLIRECSWG/11).	a) All-weather operations, harmonization of terms for authorizations, acceptance and approvals (AAA), Article 83 *bis*, and the development of a helicopter code of performance with exposure; b) image and data link data to be recorded on FDR/CVR, reliable power source for lightweight flight recorders, additional parameters for ADRS, bit error rate recording inspections and DLR and DLRS recording inspections; and c) recording of data link communications messages.	6 March 2020 20 July 2020 5 November 2020
24 (Eleventh edition)	Fifth and sixth meetings of the Flight Operations Panel (FLTOPSP/5 and 6); and the twelfth meeting of the Flight Recorder Specific Working Group (FLIRECSWG/12).	a) the availability of flight recorder maintenance documentation and the recalibration intervals of flight data recorder (FDR) sensors; and b) offshore alternates, operational credit, dangerous goods for helicopters and guidance.	7 March 2022 18 July 2022 3 November 2022
25	Fourth meeting of the Air Traffic Management Requirements and Performance Panel (ATMRPP/4)	Definitions related to flight plans and initial implementation of the flight and flow – information for a collaborative environment (FF-ICE) services.	18 March 2024 22 July 2024 28 November 2024
26	Fifth meeting of the Meteorology Panel (METP/5)	Consequential changes for the alignment of references to the new PANS-MET (Doc 10157).	2 April 2025 — 27 November 2025

ANNEX 6 — PART III

SECTION I

GENERAL

INTERNATIONAL STANDARDS AND RECOMMENDED PRACTICES

CHAPTER 1. DEFINITIONS

When the following terms are used in the Standards and Recommended Practices for international operations with helicopters, they have the following meanings:

Advanced aircraft. An aircraft with equipment in addition to that required for a basic aircraft for a given take-off, approach or landing operation.

Aerial work. An aircraft operation in which an aircraft is used for specialized services such as agriculture, construction, photography, surveying, observation and patrol, search and rescue, aerial advertisement, etc.

Aerodrome. A defined area on land or water (including any buildings, installations and equipment) intended to be used either wholly or in part for the arrival, departure and surface movement of aircraft.

Agreement summary. When an aircraft is operating under an Article 83 *bis* agreement between the State of Registry and another State, the agreement summary is a document transmitted with the Article 83 *bis* Agreement registered with the ICAO Council that identifies succinctly and clearly which functions and duties are transferred by the State of Registry to that other State.

Note.— The other State in the above definition refers to either the State of the Operator for commercial air transport operations or, for general aviation operations, to the State of the principal location of a general aviation operator.

Aircraft. Any machine that can derive support in the atmosphere from the reactions of the air other than the reactions of the air against the earth's surface.

Aircraft operating manual. A manual, acceptable to the State of the Operator, containing normal, abnormal and emergency procedures, checklists, limitations, performance information, details of the aircraft systems and other material relevant to the operation of the aircraft.

Note.— The aircraft operating manual is part of the operations manual.

Air operator certificate (AOC). A certificate authorizing an operator to carry out specified commercial air transport operations.

Air traffic service (ATS). A generic term meaning variously, flight information service, alerting service, air traffic advisory service, air traffic control service (area control service, approach control service or aerodrome control service).

Airworthy. The status of an aircraft, engine, propeller or part when it conforms to its approved design and is in a condition for safe operation.

Alternate heliport. A heliport to which a helicopter may proceed when it becomes either impossible or inadvisable to proceed to or to land at the heliport of intended landing where the necessary services and facilities are available, where aircraft performance requirements can be met and which is operational at the expected time of use. Alternate heliports include the following:

Take-off alternate. An alternate heliport at which a helicopter would be able to land should this become necessary shortly after take-off and it is not possible to use the heliport of departure.

En-route alternate. An alternate heliport at which a helicopter would be able to land in the event that a diversion becomes necessary while en-route.

Destination alternate. An alternate heliport at which a helicopter would be able to land should it become either impossible or inadvisable to land at the heliport of intended landing.

Note.— The heliport from which a flight departs may be an en-route or a destination alternate heliport for that flight.

Approach and landing phase — helicopters. That part of the flight from 300 m (1 000 ft) above the elevation of the FATO, if the flight is planned to exceed this height, or from the commencement of the descent in the other cases, to landing or to the balked landing point.

Appropriate airworthiness requirements. The comprehensive and detailed airworthiness codes established, adopted or accepted by a Contracting State for the class of aircraft, engine or propeller under consideration.

Appropriate ATS authority. The relevant authority designated by the State responsible for providing air traffic services in the airspace concerned.

Area navigation (RNAV). A method of navigation which permits aircraft operation on any desired flight path within the coverage of ground- or space-based navigation aids or within the limits of the capability of self-contained aids, or a combination of these.

Note.— Area navigation includes performance-based navigation as well as other operations that do not meet the definition of performance-based navigation.

Basic aircraft. An aircraft which has the minimum equipment required to perform the intended take-off, approach or landing operation.

Cabin crew member. A crew member who performs, in the interest of safety of passengers, duties assigned by the operator or the pilot-in-command of the aircraft, but who shall not act as a flight crew member.

COMAT. Operator material carried on an operator's aircraft for the operator's own purposes.

Combined vision system (CVS). A system to display images from a combination of an enhanced vision system (EVS) and a synthetic vision system (SVS).

Commercial air transport operation. An aircraft operation involving the transport of passengers, cargo or mail for remuneration or hire.

Configuration deviation list (CDL). A list established by the organization responsible for the type design with the approval of the State of Design which identifies any external parts of an aircraft type which may be missing at the commencement of a flight, and which contains, where necessary, any information on associated operating limitations and performance correction.

Congested area. In relation to a city, town or settlement, any area which is substantially used for residential, commercial or recreational purposes.

Congested hostile environment. A hostile environment within a congested area.

***Continuing airworthiness*.** 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.

***Continuing airworthiness records*.** Records which are related to the continuing airworthiness status of an aircraft, engine, rotor or associated part.

Continuous descent final approach (CDFA). A technique, consistent with stabilized approach procedures, for flying the final approach segment (FAS) of an instrument non-precision approach (NPA) procedure as a continuous descent, without level-off, from an altitude/height at or above the final approach fix altitude/height to a point approximately 15 m (50 ft) above the landing runway threshold or the point where the flare manoeuvre begins for the type of aircraft flown; for the FAS of an NPA procedure followed by a circling approach, the CDFA technique applies until circling approach minima (circling OCA/H) or visual flight manoeuvre altitude/height are reached.

Crew member. A person assigned by an operator to duty on an aircraft during a flight duty period.

Dangerous goods. Articles or substances which are capable of posing a risk to health, safety, property or the environment and which are shown in the list of dangerous goods in the Technical Instructions or which are classified according to those Instructions.

Note.— Dangerous goods are classified in Annex 18, Chapter 3.

Decision altitude (DA) *or* ***decision height (DH).*** A specified altitude or height in a three-dimensional (3D) instrument approach operation at which a missed approach must be initiated if the required visual reference to continue the approach has not been established.

Note 1.— Decision altitude (DA) is referenced to mean sea level and decision height (DH) is referenced to the threshold elevation.

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 aircraft position and rate of change of position, in relation to the desired flight path. In Category III operations with a decision height the required visual reference is that specified for the particular procedure and operation.

Note 3.— For convenience where both expressions are used they may be written in the form "decision altitude/height" and abbreviated "DA/H".

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 one engine inoperative, is not assured and a forced landing may be required.

Note.— Defined points apply to helicopters operating in performance Class 2 only.

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 one engine inoperative, is not assured and a forced landing may be required.

Note.— Defined points apply to helicopters operating in performance Class 2 only.

Duty. Any task that flight or cabin crew members are required by the operator to perform, including flight duty, administrative work, training, positioning and standby when it is likely to induce fatigue.

Duty period. A period which starts when a flight- or cabin-crew member is required by an operator to report for or to commence a duty and ends when that person is free from all duties.

Electronic flight bag (EFB). An electronic information system, comprised of equipment and applications for flight crew, which allows for the storing, updating, displaying and processing of EFB functions to support flight operations or duties.

Elevated heliport. A heliport located on a raised structure on land.

Emergency locator transmitter (ELT). A generic term describing equipment which broadcast distinctive signals on designated frequencies and, depending on application, may be automatically activated by impact or be manually activated. An ELT may be any of the following:

Automatic fixed ELT (ELT(AF)). An automatically activated ELT which is permanently attached to an aircraft.

Automatic portable ELT (ELT(AP)). An automatically activated ELT which is rigidly attached to an aircraft but readily removable from the aircraft.

Automatic deployable ELT (ELT(AD)). An ELT which is rigidly attached to an aircraft and which is automatically deployed and activated by impact, and, in some cases, also by hydrostatic sensors. Manual deployment is also provided.

Survival ELT (ELT(S)). An ELT which is removable from an aircraft, stowed so as to facilitate its ready use in an emergency, and manually activated by survivors.

Engine. A unit used or intended to be used for aircraft propulsion. It consists of at least those components and equipment necessary for functioning and control, but excludes the propeller/rotors (if applicable).

Enhanced vision system (EVS). A system to display electronic real-time images of the external scene achieved through the use of image sensors.

Note.— EVS does not include night vision imaging systems (NVIS).

En-route phase. 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.

Note.— Where adequate obstacle clearance cannot be guaranteed visually, flights must be planned to ensure that obstacles can be cleared by an appropriate margin. In the event of failure of the critical engine, operators may need to adopt alternative procedures.

Fatigue. A physiological state of reduced mental or physical performance capability resulting from sleep loss, extended wakefulness, circadian phase, and/or workload (mental and/or physical activity) that can impair a person's alertness and ability to perform safety-related operational duties.

Fatigue Risk Management System (FRMS). A data-driven means of continuously monitoring and managing fatigue-related safety risks, based upon scientific principles and knowledge as well as operational experience that aims to ensure relevant personnel are performing at adequate levels of alertness.

Filed flight plan (FPL or eFPL). The latest flight plan as submitted by the pilot, an operator or a designated representative for use by ATS units.

Note.— The FPL denotes a filed flight plan exchanged using aeronautical fixed service while eFPL denotes a filed flight plan exchanged using flight and flow – information for a collaborative environment (FF-ICE) services. The eFPL allows for the exchange of additional information not contained within the FPL.

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. Where the FATO is to be used by helicopters operating in performance Class 1, the defined area includes the rejected take-off area available.

Final approach segment (FAS). That segment of an instrument approach procedure in which alignment and descent for landing are accomplished.

Flight crew member. A licensed crew member charged with duties essential to the operation of an aircraft during a flight duty period.

Flight duty period. A period which commences when a flight or cabin crew member is required to report for duty that includes a flight or a series of flights and which finishes when the aircraft finally comes to rest and the engines are shut down at the end of the last flight on which he/she is a crew member.

Flight manual. A manual, associated with the certificate of airworthiness, containing limitations within which the aircraft is to be considered airworthy, and instructions and information necessary to the flight crew members for the safe operation of the aircraft.

Flight operations officer/flight dispatcher. A person designated by the operator to engage in the control and supervision of flight operations, whether licensed or not, suitably qualified in accordance with Annex 1, who supports, briefs and/or assists the pilot-in-command in the safe conduct of the flight.

Flight plan. Specified information relative to an intended flight or portion of a flight of an aircraft.

Note 1.— The term flight plan may be prefixed by the words "preliminary", "filed", "current" or "operational" to indicate the context and different stages of a flight.

Note 2.— When the word "message" is used as a suffix to this term, it denotes the content and format of the flight plan data as transmitted.

Flight recorder. Any type of recorder installed in the aircraft for the purpose of complementing accident/incident investigation.

Automatic deployable flight recorder (ADFR). A combination flight recorder installed on the aircraft which is capable of automatically deploying from the aircraft.

Flight safety documents system. A set of interrelated documentation established by the operator, compiling and organizing information necessary for flight and ground operations, and comprising, as a minimum, the operations manual and the operator's maintenance control manual.

Flight simulation training device. Any one of the following three types of apparatus in which flight conditions are simulated on the ground:

A flight simulator, which provides an accurate representation of the flight deck of a particular aircraft type to the extent that the mechanical, electrical, electronic, etc. aircraft systems control functions, the normal environment of flight crew members, and the performance and flight characteristics of that type of aircraft are realistically simulated;

A flight procedures trainer, which provides a realistic flight deck environment, and which simulates instrument responses, simple control functions of mechanical, electrical, electronic, etc. aircraft systems, and the performance and flight characteristics of aircraft of a particular class;

A basic instrument flight trainer, which is equipped with appropriate instruments, and which simulates the flight deck environment of an aircraft in flight in instrument flight conditions.

Flight time — helicopters. 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.

General aviation operation. An aircraft operation other than a commercial air transport operation or an aerial work operation.

Ground handling. Services necessary for an aircraft's arrival at, and departure from, an airport, other than air traffic services.

Head-up display (HUD). A display system that presents flight information into the pilot's forward external field of view.

Helicopter. A heavier-than-air aircraft supported in flight chiefly by the reactions of the air on one or more power-driven rotors on substantially vertical axes.

Note.— Some States use the term "rotorcraft" as an alternative to "helicopter".

Helideck. A heliport located on a floating or fixed offshore structure.

Heliport. An aerodrome or a defined area on a structure intended to be used wholly or in part for the arrival, departure and surface movement of helicopters.

Note 1.— Throughout this Part, when the term "heliport" is used, it is intended that the term also applies to aerodromes primarily meant for the use of aeroplanes.

Note 2.— Helicopters may be operated to and from areas other than heliports.

Heliport operating minima. The limits of usability of a heliport for:

a) take-off, expressed in terms of runway visual range and/or visibility and, if necessary, cloud conditions;

b) landing in 2D instrument approach operations, expressed in terms of visibility and/or runway visual range, minimum descent altitude/height (MDA/H) and, if necessary, cloud conditions; and

c) landing in 3D instrument approach operations, expressed in terms of visibility and/or runway visual range and decision altitude/height (DA/H) as appropriate to the type and/or category of the operation.

Hostile environment. An environment in which:

a) a safe forced landing cannot be accomplished because the surface and surrounding environment are 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.

Human Factors principles. Principles which apply to aeronautical design, certification, training, operations and maintenance and which seek safe interface between the human and other system components by proper consideration to human performance.

Human performance. Human capabilities and limitations which have an impact on the safety, security and efficiency of aeronautical operations.

Instrument approach operations. An approach and landing using instruments for navigation guidance based on an instrument approach procedure. There are two methods for executing instrument approach operations:

a) a two-dimensional (2D) instrument approach operation, using lateral navigation guidance only; and

b) a three-dimensional (3D) instrument approach operation, using both lateral and vertical navigation guidance.

Note.— Lateral and vertical navigation guidance refers to the guidance provided either by:

a) a ground-based radio navigation aid; or

b) computer-generated navigation data from ground-based, space-based, self-contained navigation aids or a combination of these.

Instrument approach procedure (IAP). A series of predetermined manoeuvres by reference to flight instruments with specified protection from obstacles from the initial approach fix, or where applicable, from the beginning of a defined arrival route to a point from which a landing can be completed and thereafter, if a landing is not completed, to a position at which holding or en-route obstacle clearance criteria apply. Instrument approach procedures are classified as follows:

Non-precision approach (NPA) procedure. An instrument approach procedure designed for 2D instrument approach operations Type A.

Note.— Non-precision approach procedures may be flown using a continuous descent final approach (CDFA) technique. CDFAs with advisory VNAV guidance calculated by on-board equipment are considered 3D instrument approach operations. CDFAs with manual calculation of the required rate of descent are considered 2D instrument approach operations. For more information on CDFAs, refer to PANS-OPS (Doc 8168), Volume I, Part II, Section 5.

Approach procedure with vertical guidance (APV). A performance-based navigation (PBN) instrument approach procedure designed for 3D instrument approach operations Type A.

Precision approach (PA) procedure. An instrument approach procedure based on navigation systems (ILS, MLS, GLS and SBAS CAT I) designed for 3D instrument approach operations Type A or B.

Note.— Refer to Section II, Chapter 2, 2.2.8.3 for instrument approach operation types.

Instrument meteorological conditions (IMC). Meteorological conditions expressed in terms of visibility, distance from cloud, and ceiling*, less than the minima specified for visual meteorological conditions.

Note.— The specified minima for visual meteorological conditions are contained in Chapter 4 of Annex 2.

Integrated survival suit. A survival suit which meets the combined requirements of the survival suit and life jacket.

Landing decision point (LDP). The point used in determining landing performance from which, an engine failure occurring at this point, the landing may be safely continued or a balked landing initiated.

Note.— LDP applies only to helicopters operating in performance Class 1.

Low-visibility operations (LVO). Approach operations in RVRs less than 550 m and/or with a DH less than 60 m (200 ft) or take-off operations in RVRs less than 400 m.

* As defined in Annex 2.

Maintenance. The performance of tasks on an aircraft, engine, propeller or associated part required to ensure the continuing airworthiness of an aircraft, engine, propeller or associated part including any one or combination of overhaul, inspection, replacement, defect rectification, and the embodiment of a modification or repair.

Maintenance organization's procedures manual. A document endorsed by the head of the maintenance organization which details the maintenance organization's structure and management responsibilities, scope of work, description of facilities, maintenance procedures and quality assurance or inspection systems.

Maintenance programme. A document which describes the specific scheduled maintenance tasks and their frequency of completion and related procedures, such as a reliability programme, necessary for the safe operation of those aircraft to which it applies.

Maintenance release. A document which contains a certification confirming that the maintenance work to which it relates has been completed in a satisfactory manner in accordance with appropriate airworthiness requirements.

Master minimum equipment list (MMEL). A list established for a particular aircraft type by the organization responsible for the type design with the approval of the State of Design containing items, one or more of which is permitted to be unserviceable at the commencement of a flight. The MMEL may be associated with special operating conditions, limitations or procedures.

Maximum mass. Maximum certificated take-off mass.

Minimum descent altitude (MDA) or ***minimum descent height (MDH).*** A specified altitude or height in a 2D instrument approach operation or circling approach operation below which descent must not be made without the required visual reference.

Note 1.— Minimum descent altitude (MDA) is referenced to mean sea level and minimum descent height (MDH) is referenced to the aerodrome elevation or to the threshold elevation if that is more than 2 m (7 ft) below the aerodrome elevation. A minimum descent height for a circling approach is referenced to the aerodrome elevation.

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 aircraft position and rate of change of position, in relation to the desired flight path. In the case of a circling approach the required visual reference is the runway environment.

Note 3.— For convenience when both expressions are used they may be written in the form "minimum descent altitude/height" and abbreviated "MDA/H".

Minimum equipment list (MEL). A list which provides for the operation of aircraft, subject to specified conditions, with particular equipment inoperative, prepared by an operator in conformity with, or more restrictive than, the MMEL established for the aircraft type.

Modification. A change to the type design of an aircraft, engine or propeller.

Note.— A modification may also include the embodiment of the modification which is a maintenance task subject to a maintenance release. Further guidance on aircraft maintenance, modification and repair is contained in the Airworthiness Manual *(Doc 9760)*.

Navigation specification. A set of aircraft and flight crew requirements needed to support performance-based navigation operations within a defined airspace. There are two kinds of navigation specifications:

Required navigation performance (RNP) specification. A navigation specification based on area navigation that includes the requirement for performance monitoring and alerting, designated by the prefix RNP, e.g. RNP 4, RNP APCH.

Area navigation (RNAV) specification. A navigation specification based on area navigation that does not include the requirement for performance monitoring and alerting, designated by the prefix RNAV, e.g. RNAV 5, RNAV 1.

Note 1.— The Performance-based Navigation (PBN) Manual *(Doc 9613), Volume II, contains detailed guidance on navigation specifications.*

Note 2.— The term RNP, previously defined as "a statement of the navigation performance necessary for operation within a defined airspace", has been removed from this Annex as the concept of RNP has been overtaken by the concept of PBN. The term RNP in this Annex is now solely used in the context of navigation specifications that require performance monitoring and alerting, e.g. RNP 4 refers to the aircraft and operating requirements, including a 4 NM lateral performance with on-board performance monitoring and alerting that are detailed in Doc 9613.

Night. The hours between the end of evening civil twilight and the beginning of morning civil twilight or such other period between sunset and sunrise, as may be prescribed by the appropriate authority.

Note.— Civil twilight ends in the evening when the centre of the sun's disc is 6 degrees below the horizon and begins in the morning when the centre of the sun's disc is 6 degrees below the horizon.

Non-congested hostile environment. A hostile environment outside a congested area.

Non-hostile environment. An environment in which:

a) a safe forced landing can be accomplished because the surface and surrounding environment are adequate;

b) the helicopter occupants can be adequately protected from the elements;

c) search and rescue response/capability is provided consistent with anticipated exposure; and

d) the assessed risk of endangering persons or property on the ground is acceptable.

Note.— Those parts of a congested area satisfying the above requirements are considered non-hostile.

Obstacle clearance altitude (OCA) or ***obstacle clearance height (OCH).*** The lowest altitude or the lowest height above the elevation of the relevant runway threshold or the aerodrome elevation as applicable, used in establishing compliance with appropriate obstacle clearance criteria.

Note 1.— Obstacle clearance altitude is referenced to mean sea level and obstacle clearance height is referenced to the threshold elevation or in the case of non-precision approach procedures to the aerodrome elevation or the threshold elevation if that is more than 2 m (7 ft) below the aerodrome elevation. An obstacle clearance height for a circling approach procedure is referenced to the aerodrome elevation.

Note 2.— For convenience when both expressions are used they may be written in the form "obstacle clearance altitude/height" and abbreviated "OCA/H".

Offshore operations. Operations which routinely have a substantial proportion of the flight conducted over sea areas to or from offshore locations. Such operations include, but are not limited to, support of offshore oil, gas and mineral exploitation and sea-pilot transfer.

Operation. An activity or group of activities which are subject to the same or similar hazards and which require a set of equipment to be specified, or the achievement and maintenance of a set of pilot competencies, to eliminate or mitigate the risk of such hazards.

Note.— Such activities could include, but would not be limited to, offshore operations, heli-hoist operations or emergency medical service.

Operational control. The exercise of authority over the initiation, continuation, diversion or termination of a flight in the interest of the safety of the aircraft and the regularity and efficiency of the flight.

Operational credit. A credit authorized for operations with an advanced aircraft enabling a lower aerodrome operating minimum than would normally be authorized for a basic aircraft, based upon the performance of advanced aircraft systems utilizing the available external infrastructure.

Operational flight plan. The operator's plan for the safe conduct of the flight based on considerations of helicopter performance, other operating limitations and relevant expected conditions on the route to be followed and at the heliports concerned.

Operations in performance Class 1. Operations with performance such that, in the event of a critical engine failure, performance is available to enable the helicopter to safely continue the flight to an appropriate landing area, unless the failure occurs prior to reaching the take-off decision point (TDP) or after passing the landing decision point (LDP), in which cases the helicopter must be able to land within the rejected take-off or landing area.

Operations in performance Class 2. Operations with performance such that, in the event of critical engine failure, performance is available to enable the helicopter to safely continue the flight to an appropriate landing area, except when the failure occurs early during the take-off manoeuvre or late in the landing manoeuvre, in which cases a forced landing may be required.

Operations in performance Class 3. Operations with performance such that, in the event of an engine failure at any time during the flight, a forced landing will be required.

Operations manual. A manual containing procedures, instructions and guidance for use by operational personnel in the execution of their duties.

Operations specifications. The authorizations including specific approvals, conditions and limitations associated with the air operator certificate and subject to the conditions in the operations manual.

Operator. The person, organization or enterprise engaged in or offering to engage in an aircraft operation.

Operator's maintenance control manual. A document which describes the operator's procedures necessary to ensure that all scheduled and unscheduled maintenance is performed on the operator's aircraft on time and in a controlled and satisfactory manner.

Performance-based aerodrome operating minimum (PBAOM). A lower aerodrome operating minimum, for a given take-off, approach or landing operation, than is available when using a basic aircraft.

Note 1.— The PBAOM is derived by considering the combined capabilities of the aircraft and available ground facilities. Additional guidance material on PBAOM may be found in the Manual of All-Weather Operations *(Doc 9365).*

Note 2.— PBAOM may be based on operational credits.

Note 3.— PBAOM are not limited to PBN operations.

Performance-based communication (PBC). Communication based on performance specifications applied to the provision of air traffic services.

Note.— An RCP specification includes communication performance requirements that are allocated to system components in terms of the communication to be provided and associated transaction time, continuity, availability, integrity, safety and functionality needed for the proposed operation in the context of a particular airspace concept.

Performance-based navigation (PBN). Area navigation based on performance requirements for aircraft operating along an ATS route, on an instrument approach procedure or in a designated airspace.

Note.— Performance requirements are expressed in navigation specifications (RNAV specification, RNP specification) in terms of accuracy, integrity, continuity, availability and functionality needed for the proposed operation in the context of a particular airspace concept.

Performance-based surveillance (PBS). Surveillance based on performance specifications applied to the provision of air traffic services.

Note.— An RSP specification includes surveillance performance requirements that are allocated to system components in terms of the surveillance to be provided and associated data delivery time, continuity, availability, integrity, accuracy of the surveillance data, safety and functionality needed for the proposed operation in the context of a particular airspace concept.

Pilot-in-command. The pilot designated by the operator, or in the case of general aviation, the owner, as being in command and charged with the safe conduct of a flight.

Point of no return. The last possible geographic point at which an aircraft can proceed to the destination aerodrome as well as to an available en-route alternate aerodrome for a given flight.

Preliminary flight plan (PFP). The information related to a flight submitted by an operator or a designated representative to conduct collaborative planning of a flight, prior to filing a flight plan.

Psychoactive substances. Alcohol, opioids, cannabinoids, sedatives and hypnotics, cocaine, other psychostimulants, hallucinogens, and volatile solvents, whereas coffee and tobacco are excluded.

Repair. The restoration of an aircraft, engine or associated part to an airworthy condition in accordance with the appropriate airworthiness requirements after it has been damaged or subjected to wear.

Required communication performance (RCP) specification. A set of requirements for air traffic service provision and associated ground equipment, aircraft capability, and operations needed to support performance-based communication.

Required surveillance performance (RSP) specification. A set of requirements for air traffic service provision and associated ground equipment, aircraft capability, and operations needed to support performance-based surveillance.

Rest period. A continuous and defined period of time, subsequent to and/or prior to duty, during which flight or cabin crew members are free of all duties.

Runway visual range (RVR). The range over which the pilot of an aircraft on the centre line of a runway can see the runway surface markings or the lights delineating the runway or identifying its centre line.

Safe forced landing. Unavoidable landing or ditching with a reasonable expectancy of no injuries to persons in the aircraft or on the surface.

Safety management system (SMS). A systematic approach to managing safety, including the necessary organizational structures, accountability, responsibilities, policies and procedures.

Series of flights. Series of flights are consecutive flights that:

a) begin and end within a period of 24 hours; and

b) are all conducted by the same pilot-in-command.

Specific approval. A specific approval is an approval which is documented in the operations specifications for commercial air transport operations or in the list of specific approvals for non-commercial operations.

Note.— The terms authorization, specific approval, approval and acceptance are further described in Attachment D.

State of Registry. The State on whose register the aircraft is entered.

Note.— In the case of the registration of aircraft of an international operating agency on other than a national basis, the States constituting the agency are jointly and severally bound to assume the obligations which, under the Chicago Convention, attach to a State of Registry. See, in this regard, the Council Resolution of 14 December 1967 on Nationality and Registration of Aircraft Operated by International Operating Agencies which can be found in Policy and Guidance Material on the Economic Regulation of International Air Transport *(Doc 9587).*

State of the Aerodrome. The State in whose territory the aerodrome is located.

Note.— State of the Aerodrome includes heliports and landing locations.

State of the Operator. The State in which the operator's principal place of business is located or, if there is no such place of business, the operator's permanent residence.

State of the principal location of a general aviation operator. The State in which the operator of a general aviation aircraft has its principal place of business or, if there is no such place of business, its permanent residence.

Note.— Guidance concerning the options for the principal location of a general aviation operator is contained in the Manual on the Implementation of Article 83 *bis* of the Convention on International Civil Aviation *(Doc* 10059*).*

Synthetic vision system (SVS). A system to display data-derived synthetic images of the external scene from the perspective of the flight deck.

Take-off and initial climb phase. That part of the flight from the start of take-off to 300 m (1 000 ft) above the elevation of the FATO, if the flight is planned to exceed this height, or to the end of the climb in the other cases.

Take-off decision point (TDP). The point used in determining take-off performance from which, an engine failure occurring at this point, either a rejected take-off may be made or a take-off safely continued.

Note.— TDP applies only to helicopters operating in performance Class 1.

Visual meteorological conditions (VMC). Meteorological conditions expressed in terms of visibility, distance from cloud, and ceiling,* equal to or better than specified minima.

Note.— The specified minima are contained in Chapter 4 of Annex 2.

Vross. The minimum speed at which climb shall be achieved with the critical engine inoperative, the remaining engines operating within approved operating limits.

Note.— The speed referred to above may be measured by instrument indications or achieved by a procedure specified in the flight manual.

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* As defined in Annex 2.

CHAPTER 2. APPLICABILITY

The Standards and Recommended Practices contained in Annex 6, Part III shall be applicable to all helicopters engaged in international commercial air transport operations or in international general aviation operations, except that these Standards and Recommended Practices are not applicable to helicopters engaged in aerial work.

Note 1.— Standards and Recommended Practices applicable to the operation of aeroplanes by operators authorized to conduct international commercial air transport operations are to be found in Annex 6, Part I.

Note 2.— Standards and Recommended Practices applicable to international general aviation operations with aeroplanes are to be found in Annex 6, Part II.

ANNEX 6 — PART III

SECTION II

INTERNATIONAL COMMERCIAL AIR TRANSPORT

CHAPTER 1. GENERAL

Note 1.— Although the Convention on International Civil Aviation allocates to the State of Registry certain functions which that State is entitled to discharge, or obligated to discharge, as the case may be, the Assembly recognized, in Resolution A23-13 that the State of Registry may be unable to fulfil its responsibilities adequately in instances where aircraft are leased, chartered or interchanged — in particular without crew — by the operator of another State and that the Convention may not adequately specify the rights and obligations of the State of the operator in such instances until such time as Article 83 bis *of the Convention enters into force. Accordingly, the Council urged that if, in the above-mentioned instances, the State of Registry finds itself unable to discharge adequately the functions allocated to it by the Convention, it delegate to the State of the Operator, subject to acceptance by the latter State, those functions of the State of Registry that can more adequately be discharged by the State of the Operator. It was understood that pending entry into force of Article 83* bis *of the Convention the foregoing action would only be a matter of practical convenience and would not affect either the provisions of the Chicago Convention prescribing the duties of the State of Registry or any third State. However, as Article 83* bis *of the Convention entered into force on 20 June 1997, such transfer agreements will have effect in respect of Contracting States which have ratified the related Protocol (Doc 9318) upon fulfilment of the conditions established in Article 83* bis*.*

Note 2.— In the case of international operations effected jointly with helicopters, not all of which are registered in the same Contracting State, nothing in this Part of the Annex prevents the States concerned from entering into an agreement for the joint exercise of the functions placed upon the State of Registry by the provisions of the relevant Annexes.

1.1 COMPLIANCE WITH LAWS, REGULATIONS AND PROCEDURES

1.1.1 The operator shall ensure that all employees when abroad know that they must comply with the laws, regulations and procedures of those States in which their operations are conducted.

1.1.2 The operator shall ensure that 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 heliports to be used and the air navigation facilities relating thereto. The operator shall ensure that other members of the flight crew are familiar with such of these regulations and procedures as are pertinent to the performance of their respective duties in the operation of the helicopter.

Note.— Information for pilots and flight operations personnel on flight procedure parameters and operational procedures is contained in PANS-OPS (Doc 8168), Volume I. Criteria for the construction of visual and instrument flight procedures are contained in PANS-OPS (Doc 8168), Volume II. Obstacle clearance criteria and procedures used in certain States may differ from PANS-OPS, and knowledge of these differences is important for safety reasons.

1.1.3 The operator or a designated representative shall have responsibility for operational control.

Note.— The rights and obligations of a State in respect to the operation of helicopters registered in that State are not affected by this provision.

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

Note.— Guidance on the operational control organization and the role of the flight operations officer/flight dispatcher is contained in the Manual of Procedures for Operations Inspection, Certification and Continued Surveillance *(Doc 8335). Detailed guidance on the authorization, duties and responsibilities of the flight operations officer/flight dispatcher is contained in the manual* Preparation of an Operations Manual *(Doc 9376). The requirements for age, skill, knowledge and experience for licensed flight operations officers/flight dispatchers are contained in Annex 1.*

1.1.5 If an emergency situation which endangers the safety of the helicopter or persons becomes known first to the flight operations officer/flight dispatcher, action by that person in accordance with 2.6.1 shall include, where necessary, notification to the appropriate authorities of the nature of the situation without delay, and requests for assistance if required.

1.1.6 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 State of the Operator. Such reports shall be submitted as soon as possible and normally within ten days.

1.1.7 Operators shall ensure that pilots-in-command have available on board the helicopter all the essential information concerning the search and rescue services in the area over which the helicopter will be flown.

Note.— This information may be made available to the pilot by means of the operations manual or such other means as is considered appropriate.

1.1.8 Operators shall ensure that flight crew members demonstrate the ability to speak and understand the language used for radiotelephony communications as specified in Annex 1.

1.2 COMPLIANCE BY A FOREIGN OPERATOR WITH LAWS, REGULATIONS AND PROCEDURES OF A STATE

1.2.1 When a State identifies a case of non-compliance or suspected non-compliance by a foreign operator with laws, regulations and procedures applicable within that State's territory, or a similar serious safety issue with that operator, that State 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.

1.2.2 In the case of notification to States as specified in 1.2.1, if the issue and its resolution warrant it, the State in which the operation is conducted 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.

Note.— The Manual of Procedures for Operations Inspection, Certification and Continued Surveillance *(Doc 8335) provides guidance on the surveillance of operations by foreign operators. The manual also contains guidance on the consultations and related activities, as specified in 1.2.2, including the ICAO model clause on aviation safety, which, if included in a bilateral or multilateral agreement, provides for consultations among States, when safety issues are identified by any of the parties to a bilateral or multilateral agreement on air services.*

1.3 SAFETY MANAGEMENT

Note.— Annex 19 includes safety management provisions for air operators. Further guidance is contained in the Safety Management Manual *(Doc 9859).*

1.3.1 **Recommendation.—** 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 should establish and maintain a flight data analysis programme as part of its safety management system.*

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.

1.3.2 A flight data analysis programme shall contain adequate safeguards to protect the source(s) of the data in accordance with Appendix 3 to Annex 19.

Note.— Guidance on the establishment of flight data analysis programmes is included in the Manual on Flight Data Analysis Programmes (FDAP) *(Doc 10000).*

1.3.3 States 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 as per Annex 13, except where the recordings or transcripts are:

a) 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 Annex 19;

b) 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 Annex 19; or

c) used for inspections of flight recorder systems as provided in Section 6 of Appendix 4.

Note.— Provisions on the protection of safety data, safety information and related sources are contained in Appendix 3 to Annex 19. When an investigation under Annex 13 is instituted, investigation records are subject to the protections accorded by Annex 13.

1.3.4 States shall not allow the use of recordings or transcripts of FDR, ADRS, Class B and C AIR, and Class B and C AIRS for purposes other than the investigation of an accident or incident as per Annex 13, except where the recordings or transcripts are subject to the protections accorded by Annex 19 and are:

a) used by the operator for airworthiness or maintenance purposes;

b) used by the operator in the operation of a flight data analysis programme as provided in Section II of this Annex;

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

d) de-identified; or

e) disclosed under secure procedures.

Note.— Provisions on the protection of safety data, safety information and related sources are contained in Appendix 3 to Annex 19.

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

Note.— Guidance on the development and organization of a flight safety documents system is provided in Attachment D.

1.4 USE OF PSYCHOACTIVE SUBSTANCES

Note.— Provisions concerning the use of psychoactive substances are contained in Annex 1, 1.2.7 and Annex 2, 2.5.

CHAPTER 2. FLIGHT OPERATIONS

2.1 OPERATING FACILITIES

2.1.1 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.

Note.— "Reasonable means" in this Standard is intended to denote the use, at the point of departure, of information available to the operator either through official information published by the aeronautical information services or readily obtainable from other sources.

2.1.2 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.

2.2 OPERATIONAL CERTIFICATION AND SUPERVISION

2.2.1 The air operator certificate

2.2.1.1 The operator shall not engage in commercial air transport operations unless in possession of a valid air operator certificate issued by the State of the Operator.

2.2.1.2 The air operator certificate shall authorize the operator to conduct commercial air transport operations in accordance with the operations specifications.

Note.— Provisions for the content of the air operator certificate and its associated operations specifications are contained in 2.2.1.5 and 2.2.1.6.

2.2.1.3 The issue of an air operator certificate by the State of the Operator 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.

Note.— Attachment C contains guidance on the issue of an air operator certificate.

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

2.2.1.4 The continued validity of an air operator certificate shall depend upon the operator maintaining the requirements of 2.2.1.3 under the supervision of the State of the Operator.

2.2.1.5 The air operator certificate shall contain at least the following information and shall follow the layout of Appendix 3, paragraph 2:

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

b) the air operator certificate number and its expiration date;

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

d) the date of issue and the 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.

2.2.1.6 The operations specifications associated with the air operator certificate shall contain at least the information listed in Appendix 3, paragraph 3, and shall follow the layout of Appendix 3, paragraph 3.

Note.— Attachment C, paragraph 3.2.2 contains additional information that may be listed in the operations specifications associated with the air operator certificate.

2.2.1.7 Air operator certificates, and their associated operations specifications, first issued from 20 November 2008 shall follow the layouts of Appendix 3, paragraphs 2 and 3.

2.2.1.8 The State of the Operator shall establish a system for both the certification and the continued surveillance of the operator, in accordance with Appendix 1 to this Annex and Appendix 1 to Annex 19, to ensure that the required standards of operations established in 2.2 are maintained.

2.2.2 Surveillance of operations by a foreign operator

2.2.2.1 Contracting States shall recognize 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 this Annex and in Annex 19.

2.2.2.2 States 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.

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

Note.— Guidance on the surveillance of operations by foreign operators may be found in the Manual of Procedures for Operations Inspection, Certification and Continued Surveillance *(Doc 8335).*

2.2.3 Operations manual

2.2.3.1 The operator shall provide for the use and guidance of operations personnel concerned, an operations manual constructed using the guidance contained in Appendix 8. The operations manual shall be amended or revised as is necessary to ensure that the information contained therein is kept up to date. All such amendments or revisions shall be notified to all personnel that are required to use this manual.

2.2.3.2 The State of the Operator shall establish a requirement for the operator to provide a copy of the operations manual together with all amendments and/or revisions, for review and acceptance and, where required, approval. The operator shall incorporate in the operations manual such mandatory material as the State of the Operator may require.

Note 1.— Guidance for the organization and contents of an operations manual is provided in Appendix 8.

Note 2.— Specific items in an operations manual require the approval of the State of the Operator in accordance with the Standards in 2.2.8, 4.1.3, 7.3.1, 10.3 and 11.2.1.

2.2.4 Operating instructions — general

2.2.4.1 The operator shall ensure that all operations personnel are properly instructed in their particular duties and responsibilities and the relationship of such duties to the operation as a whole.

2.2.4.2 A helicopter rotor shall not be turned under power, for the purpose of flight, without a qualified pilot at the controls. 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.

2.2.4.3 **Recommendation.—** *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 take-off and initial climb phase for the existing take-off conditions and intended take-off technique. This information should be based on the helicopter manufacturer's data, or other data acceptable to the State of the Operator, and should be included in the operations manual*.

2.2.5 In-flight simulation of emergency situations

The operator shall ensure that when passengers or cargo are being carried, no emergency or abnormal situations shall be simulated.

2.2.6 Checklists

The checklists provided in accordance with 4.1.4 shall be used by flight crews prior to, during and after all phases of operations, and in emergency, to ensure compliance with the operating procedures contained in the aircraft operating manual, the helicopter flight manual or other documents associated with the certificate of airworthiness and otherwise in the operations manual. The design and utilization of checklists shall observe Human Factors principles.

Note.— Guidance material on the application of Human Factors principles can be found in the Human Factors Training Manual *(Doc 9683)*.

2.2.7 Minimum flight altitudes (operations under IFR)

2.2.7.1 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.

2.2.7.2 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. The minimum flight altitudes determined in accordance with the above method shall not be lower than specified in Annex 2.

2.2.7.3 **Recommendation.—** *The method for establishing the minimum flight altitudes should be approved by the State of the Operator.*

2.2.7.4 **Recommendation.—** *The State of the Operator should approve such method only after careful consideration of the probable effects of the following factors on the safety of the operation in question:*

a) the accuracy and reliability with which the position of the helicopter can be determined;

b) the inaccuracies in the indications of the altimeters used;

c) the characteristics of the terrain (e.g. sudden changes in the elevation);

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

e) possible inaccuracies in aeronautical charts; and

f) airspace restrictions.

2.2.8 Heliport or landing location operating minima

2.2.8.1 The State of the Operator shall require that the operator establish operating minima for each heliport or landing location to be used in operations and shall approve the method of determination of such minima. Such 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.

Note.— This Standard does not require the State of the Aerodrome to establish operating minima.

2.2.8.1.1 The State of the Operator shall authorize operational credit(s) for operations with advanced aircraft. Where the operational credit relates to low visibility operations, the State of the Operator shall issue a specific approval. Such authorizations shall not affect the classification of the instrument approach procedure.

Note 1.— Operational credit includes:

a) for the purposes of an approach ban (2.4.1.2) or dispatch considerations, a minimum below the heliport or landing location operating minima;

b) reducing or satisfying the visibility requirements; or

c) requiring fewer ground facilities as compensated for by airborne capabilities.

Note 2.— Guidance on operational credit and how to express the operational credit in the operations specifications for aircraft is contained in the Manual of All-Weather Operations *(Doc 9365).*

Note 3.— Information regarding a HUD or equivalent displays, including references to RTCA and EUROCAE documents, is contained in the Manual of All-Weather Operations *(Doc 9365).*

Note 4.— 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.

2.2.8.1.2 When issuing a specific approval for the operational credit, the State of the Operator shall ensure that the:

a) aircraft meets the appropriate airworthiness certification requirements;

b) 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;

c) operator has carried out a safety risk assessment of the operations supported by the equipment;

d) operator has established and documented normal and abnormal procedures and MEL;

e) operator has established a training programme for the flight crew members and relevant personnel involved in the flight preparation;

f) operator has established a system for data collection, evaluation and trend monitoring for low visibility operations for which there is an operational credit; and

g) operator has instituted appropriate procedures in respect of continuing airworthiness (maintenance and repair) practices and programmes.

Note 1.— Guidance on safety risk assessments is contained in the Safety Management Manual *(Doc 9859).*

Note 2.— Guidance on operational approvals is contained in the Manual of All-Weather Operations *(Doc 9365).*

2.2.8.1.3 For operations with operational credit with minima above those related to low visibility operations, the State of the Operator shall establish criteria for the safe operation of the aircraft.

Note.— Guidance on operational credit for operations with minima above those related to low visibility operations is contained in the Manual of All-Weather Operations *(Doc 9365).*

2.2.8.2 The State of the Operator shall require that in establishing the operating minima for each heliport or landing location which will apply to any particular operation, the operator shall take full account of:

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

b) the composition of the flight crew, their competence and experience;

c) the physical characteristics of the heliport and direction of approach;

d) the adequacy and performance of the available visual and non-visual ground aids;

e) 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 missed approach;

f) the obstacles in the approach and missed approach areas and the obstacle clearance altitude/height for the instrument approach procedures;

g) the means used to determine and report meteorological conditions;

h) the obstacles in the climb-out areas and necessary clearance margins;

i) the conditions prescribed in the operations specifications; and

j) any minima that may be promulgated by the State of the Aerodrome.

2.2.8.3 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:

a) Type A: a minimum descent height or decision height at or above 75 m (250 ft); and

b) Type B: a decision height below 75 m (250 ft). Type B instrument approach operations are categorized as:

1) 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;

2) 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; and

3) Category III (CAT III): a decision height lower than 30 m (100 ft) or no decision height and a runway visual range less than 300 m or 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 III but with an RVR in the range of CAT II would be considered a CAT III 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 credits.

Note 2.— The required visual reference means that a section of the visual aids or of the approach area should have been in view for sufficient time for the pilot to have made an assessment of the aircraft 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.

Note 3.— Guidance on approach classification as it relates to instrument approach operations, procedures, runways and navigation systems is contained in the Manual of All-Weather Operations *(Doc 9365).*

2.2.8.4 The 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.

Note.— Guidance on low visibility operations is contained in the Manual of All-Weather Operations (Doc 9365).

2.2.8.5 For take-off in low visibility, the State of the Operator shall issue a specific approval for the minimum take-off RVR.

Note.— In general, visibility for take-off is defined in terms of RVR. An equivalent horizontal visibility may also be used.

2.2.8.6 **Recommendation.—** *For instrument approach operations, heliport or landing location operating minima below 800 m visibility should not be authorized unless RVR information or an accurate measurement or observation of visibility is provided.*

Note.— Guidance on the operationally desirable and currently attainable accuracy of measurement or observation is given in the PANS-MET (Doc 10157), Attachment A.

2.2.8.7 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.

Note.— For guidance on applying a continuous descent final approach (CDFA) flight technique on non-precision approach procedures, refer to PANS-OPS (Doc 8168) Volume I, Part II, Section 5.

2.2.8.8 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.

2.2.9 Fuel and oil records

2.2.9.1 The operator shall maintain fuel and oil records to enable the State of the Operator to ascertain that, for each flight, the requirements of 2.3.6 have been complied with.

2.2.9.2 Fuel and oil records shall be retained by the operator for a period of three months.

2.2.10 Crew

Pilot-in-command. For each flight, the operator shall designate one pilot to act as pilot-in-command.

2.2.11 Passengers

2.2.11.1 The operator shall ensure that passengers are made familiar with the location and use of:

a) seat belts or harnesses;

b) emergency exits;

c) life jackets, if the carriage of life jackets is prescribed;

d) oxygen dispensing equipment, if the provision of oxygen for the use of passengers is prescribed; and

e) other emergency equipment provided for individual use, including passenger emergency briefing cards.

2.2.11.2 The operator shall ensure that the passengers are informed of the location and general manner of use of the principal emergency equipment carried for collective use.

2.2.11.3 The operator shall ensure that in an emergency during flight, passengers are instructed in such emergency action as may be appropriate to the circumstances.

2.2.11.4 The operator shall ensure that, during take-off and landing and whenever considered necessary by reason of turbulence or any emergency occurring during flight, all passengers on board a helicopter shall be secured in their seats by means of the seat belts or harnesses provided.

2.2.12 Over-water flights

All helicopters on flights over water in a hostile environment in accordance with 4.5.1 shall be certificated for ditching. Sea state shall be an integral part of ditching information.

2.3 FLIGHT PREPARATION

2.3.1 A flight, or series of flights, shall not be commenced until flight preparation forms have been completed certifying that the pilot-in-command is satisfied that:

a) the helicopter is airworthy;

b) the instruments and equipment prescribed in Chapter 4, for the particular type of operation to be undertaken, are installed and are sufficient for the flight;

c) a maintenance release as prescribed in 6.7 has been issued in respect of the helicopter;

d) the mass of the helicopter and centre of gravity location are such that the flight can be conducted safely, taking into account the flight conditions expected;

e) any load carried is properly distributed and safely secured;

f) a check has been completed indicating that the operating limitations of Chapter 3 can be complied with for the flight to be undertaken; and

g) the Standards of 2.3.3 relating to operational flight planning have been complied with.

2.3.2 Completed flight preparation forms shall be kept by the operator for a period of three months.

2.3.3 Operational flight planning

2.3.3.1 An operational flight plan shall be completed for every intended flight or series of flights, and approved by the pilot-in-command, and shall be lodged with the appropriate authority. The operator shall determine the most efficient means of lodging the operational flight plan.

2.3.3.2 The operations manual shall describe the content and use of the operational flight plan.

2.3.4 Alternate heliports

2.3.4.1 *Take-off alternate heliport*

2.3.4.1.1 A take-off alternate heliport shall be selected and specified in the operational flight plan if the weather conditions at the heliport of departure are at or below the applicable heliport operating minima.

2.3.4.1.2 For a heliport to be selected as a take-off alternate, the available information shall indicate that, at the estimated time of use, the conditions will be at or above the heliport operating minima for that operation.

2.3.4.2 *Destination alternate heliport*

2.3.4.2.1 For a flight to be conducted in accordance with IFR, at least one destination alternate shall be specified in the operational flight plan and the flight plan, unless:

a) the duration of the flight and the meteorological conditions prevailing are such that there is reasonable certainty that, at the estimated time of arrival at the heliport of intended landing, and for a reasonable period before and after such time, the approach and landing may be made under visual meteorological conditions as prescribed by the State of the Operator; or

b) the heliport of intended landing is isolated and no alternate is available. A point of no return (PNR) shall be determined.

2.3.4.2.2 For a heliport to be selected as a destination alternate, the available information shall indicate that, at the estimated time of use, the conditions will be at or above the heliport operating minima for that operation.

2.3.4.2.3 **Recommendation.**— *For a flight departing to a destination which is forecast to be below the heliport operating minima, two destination alternates should be selected. The first destination alternate should be at or above the heliport operating minima for destination and the second at or above the heliport operating minima for alternate.*

2.3.4.3 *Offshore destination alternate heliport*

2.3.4.3.1 The State of the Operator shall issue a specific approval for the operational use of offshore destination alternate heliports.

2.3.4.3.2 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:

a) 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;

b) 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;

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

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

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

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

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

2.3.4.3.4 **Recommendation**.— *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.*

2.3.4.3.5 **Recommendation**.— *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.*

2.3.4.3.6 **Recommendation**.— *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 destination alternate heliport.*

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

a) the type and circumstances of the operation;

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

c) 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 and strength, and turbulence;

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

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

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

g) specific mitigation measures;

h) helicopter equipment;

i) spare payload capacity for the carriage of additional fuel;

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

k) 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 offshore destination alternate heliports.

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

2.3.4.3.8 **Recommendation**.— *Training programmes should ensure that the requirements of Chapter 7, 7.4.2.2 are complied with, such as, but not limited to, route qualification, flight preparation, concept of operations with offshore destination alternate heliports 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.*

2.3.4.3.9 **Recommendation**.— *When the use of an offshore destination alternate heliport is planned, the meteorological observations, both at the offshore destination and the offshore destination alternate heliports, should be taken by an observer acceptable to the designated meteorological authority.*

Note.— Appropriate automatic weather stations may satisfy this requirement.

2.3.4.3.10 **Recommendation**.— *Offshore destination alternate heliports should not be used for payload enhancement.*

2.3.4.3.11 **Recommendation**.— *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.*

2.3.4.3.12 The heliport operating minima for the offshore destination and offshore destination alternate heliport required under 2.2.8.2 shall make due allowance for the availability and reliability of weather information and the geographic environment.

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

2.3.4.3.14 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 offshore destination alternate helideck.

2.3.4.3.15 **Recommendation**.— *An offshore destination alternate heliport/helideck should be more than 30 NM from the original destination to reduce the likelihood of a localized weather event precluding landings at both the offshore destination and the offshore destination alternate heliport/helideck.*

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

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

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

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

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

e) 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 destination alternate heliport will be guaranteed by the helideck provider until the landing at the offshore destination, or the offshore destination alternate heliport, is achieved.

2.3.5 Meteorological conditions

2.3.5.1 A flight to be conducted in accordance with VFR shall not be commenced 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 or in the intended area of operations under VFR will, at the appropriate time, be such as to enable compliance with these rules.

Note.— When a flight is conducted in accordance with VFR, the use of night vision imaging systems (NVIS) or other vision enhancing systems does not diminish the requirement to comply with the provisions of 2.3.5.1.

2.3.5.2 A flight to be conducted in accordance with IFR shall not be commenced unless information is available which indicates that conditions at the destination heliport or landing location or, when an alternate is required, at least one alternate heliport will, at the estimated time of arrival, be at or above the heliport operating minima.

2.3.5.3 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, acceptable to the State of the Operator, to be added to the operator's established heliport or landing location operating minima.

Note.— Guidance on the selection of these incremental values is contained in the Flight Planning and Fuel Management (FPFM) *Manual (Doc 9976).*

2.3.5.4 A flight to be operated in known or expected icing conditions shall not be commenced unless the helicopter is certificated and equipped to cope with such conditions.

2.3.5.5 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.

Note.— Guidance material is given in the Manual of Aircraft Ground De-icing/Anti-icing Operations *(Doc 9640).*

2.3.6 Fuel and oil requirements

2.3.6.1 *All helicopters.* 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.

2.3.6.2 *VFR operations.* The fuel and oil carried in order to comply with 2.3.6.1 shall, in the case of VFR operations, be at least the amount to allow the helicopter to:

a) fly to the landing site to which the flight is planned;

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

c) have an additional amount of fuel to provide for the increased consumption on the occurrence of any of the potential contingencies specified by the operator to the satisfaction of the State of the Operator.

2.3.6.3 *IFR operations.* The fuel and oil carried in order to comply with 2.3.6.1 shall, in the case of IFR operations, be at least the amount to allow the helicopter:

2.3.6.3.1 When an alternate is not required, in terms of 2.3.4.2.1 a), to fly to and execute an approach at the heliport or landing location to which the flight is planned, and thereafter to have:

a) 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

b) an additional amount of fuel to provide for the increased consumption on the occurrence of any of the potential contingencies specified by the operator to the satisfaction of the State of the Operator.

2.3.6.3.2 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:

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

b) 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

c) have an additional amount of fuel to provide for the increased consumption on the occurrence of any of the potential contingencies specified by the operator to the satisfaction of the State of the Operator.

2.3.6.3.3 When no alternate heliport or landing location is available, in terms of 2.3.4.2.1 (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 that will, based on geographic and environmental considerations, enable a safe landing to be made.

2.3.6.4 In computing the fuel and oil required in 2.3.6.1, at least the following shall be considered:

a) meteorological conditions forecast;

b) expected air traffic control routings and traffic delays;

c) for IFR flight, one instrument approach at the destination heliport, including a missed approach;

d) the procedures prescribed in the operations manual for loss of pressurization, where applicable, or failure of one engine while en-route; and

e) any other conditions that may delay the landing of the helicopter or increase fuel and/or oil consumption.

Note.— Nothing in 2.3.6 precludes amendment of a flight plan in flight in order to replan the flight to another heliport, provided that the requirements of 2.3.6 can be complied with from the point where the flight has been replanned.

2.3.6.5 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.

2.3.7 Refuelling with passengers on board or rotors turning

Note.— Except where otherwise stated, all helicopter refuelling provisions relate to operations using jet fuels. See 2.3.7.5 for restrictions specific to AVGAS/wide cut fuels.

2.3.7.1 A helicopter shall not be refuelled, rotors stopped or turning, when:

a) passengers are embarking or disembarking; or

b) when oxygen is being replenished.

2.3.7.2 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:

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

b) a constant two-way communication shall be maintained by the helicopter's intercommunication 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.

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

2.3.7.3 The operator shall establish procedures and specify conditions under which such refuelling may be carried out.

2.3.7.4 **Recommendation**.— *In addition to the requirements of 2.3.7.2, operational procedures should specify that at least the following precautions are taken:*

a) doors on the refuelling side of the helicopter remain closed where possible, unless these are the only suitable exits;

b) doors on the non-refuelling side of the helicopter remain open, weather permitting, unless otherwise specified by the RFM;

c) fire-fighting facilities of the appropriate scale be positioned so as to be immediately available in the event of a fire;

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

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

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

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

2.3.7.5 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.

2.3.7.6 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.

Note 1.— Provisions concerning aircraft refuelling are contained in Annex 14, Volume I, and guidance on safe refuelling practices is contained in the Airport Services Manual *(Doc 9137), Parts 1 and 8.*

Note 2.— 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.

2.3.8 Oxygen supply

Note.— Approximate altitudes in the Standard Atmosphere corresponding to the values of absolute pressure used in the text are as follows:

Absolute pressure	Metres	Feet
700 hPa	*3 000*	*10 000*
620 hPa	*4 000*	*13 000*
376 hPa	*7 600*	*25 000*

2.3.8.1 A flight to be operated at flight altitudes at which the atmospheric pressure in personnel compartments will be less than 700 hPa shall not be commenced unless sufficient stored breathing oxygen is carried to supply:

a) all crew members and 10 per cent of the passengers for any period in excess of 30 minutes that the pressure in compartments occupied by them will be between 700 hPa and 620 hPa; and

b) the crew and passengers for any period that the atmospheric pressure in compartments occupied by them will be less than 620 hPa.

2.3.8.2 A flight to be operated with a pressurized 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 pressurization, for any period that the atmospheric pressure in any compartment occupied by them would be less than 700 hPa. In addition, when the helicopter is operated at flight altitudes at which the atmospheric pressure is more than 376 hPa and cannot descend safely to a flight altitude at which the atmospheric pressure is equal to 620 hPa within four minutes, there shall be no less than a 10-minute supply for the occupants of the passenger compartment.

2.4 IN-FLIGHT PROCEDURES

2.4.1 Heliport operating minima

2.4.1.1 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 effected at that heliport, or at least one destination alternate heliport, in compliance with the operating minima established in accordance with 2.2.8.1.

2.4.1.2 An instrument 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.

Note.— Criteria for the final approach segment is contained in PANS-OPS (Doc 8168), Volume II.

2.4.1.3 If, after entering the final approach segment or after descending below 300 m (1 000 ft) above the heliport elevation, the reported visibility or controlling RVR falls below the specified minimum, the approach may be continued to DA/H or MDA/H. In any case, a helicopter shall not continue its approach-to-land at any heliport beyond a point at which the limits of the operating minima specified for that heliport would be infringed.

2.4.2 Meteorological observations

Note.— The procedures for making meteorological observations on board aircraft in flight and for recording and reporting them are contained in Annex 3, the PANS-ATM (Doc 4444), the PANS-MET (Doc 10157) and the appropriate Regional Supplementary Procedures *(Doc 7030).*

2.4.3 Hazardous flight conditions

Hazardous flight conditions encountered, other than those associated with meteorological conditions, shall be reported to the appropriate aeronautical station as soon as possible. The reports so rendered shall give such details as may be pertinent to the safety of other aircraft.

2.4.4 Flight crew members at duty stations

2.4.4.1 *Take-off and landing.* All flight crew members required to be on flight deck duty shall be at their stations.

2.4.4.2 *En-route.* All flight crew members required to be on flight deck duty shall remain at their stations except when their absence is necessary for the performance of duties in connection with the operation of the helicopter or for physiological needs.

2.4.4.3 *Seat belts.* All flight crew members shall keep their seat belt fastened when at their stations.

2.4.4.4 *Safety harness.* Any flight crew member occupying a pilot's seat shall keep the safety harness fastened during the take-off and landing phases; all other flight crew members shall keep their safety harness fastened during the take-off and landing phases unless the shoulder straps interfere with the performance of their duties, in which case the shoulder straps may be unfastened but the seat belt must remain fastened.

Note.— Safety harness includes shoulder straps and a seat belt which may be used independently.

2.4.5 Use of oxygen

All flight crew members, when engaged in performing duties essential to the safe operation of a helicopter in flight, shall use breathing oxygen continuously whenever the circumstances prevail for which its supply has been required in 2.3.8.1 or 2.3.8.2.

2.4.6 Safeguarding of cabin crew and passengers in pressurized aircraft in the event of loss of pressurization

Recommendation.— *Cabin crew should 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 pressurization 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. Passengers should 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 pressurization.*

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 pressurization.

2.4.7 Instrument flight procedures

2.4.7.1 One or more instrument approach procedures to serve each final approach and take-off area or heliport utilized for instrument flight operations shall be approved and promulgated by the State in which the heliport is located, or by the State which is responsible for the heliport when located outside the territory of any State.

2.4.7.2 All helicopters operated in accordance with IFR shall comply with the instrument approach procedures approved by the State in which the heliport is located, or by the State which is responsible for the heliport when located outside the territory of any State.

Note 1.— Operational procedures recommended for the guidance of operations personnel involved in instrument flight operations are described in PANS-OPS (Doc 8168), Volume I.

Note 2.— Criteria for the construction of instrument flight procedures for the guidance of procedure specialists are provided in PANS-OPS (Doc 8168), Volume II. Obstacle clearance criteria and procedures used in certain States may differ from PANS-OPS, and knowledge of these differences is important for safety reasons (see Section II, Chapter 1, 1.1.1).

2.4.8 Helicopter operating procedures for noise abatement

Recommendation.— *The operator should ensure that take-off and landing procedures take into account the need to minimize the effect of helicopter noise.*

2.4.9 In-flight fuel management

2.4.9.1 The operator shall establish policies and procedures, approved by the State of the Operator, to ensure that in-flight fuel checks and fuel management are performed.

2.4.9.2 The pilot-in-command 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.

2.4.9.3 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.

2.4.9.4 The pilot-in-command 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 in compliance with 2.3.6.

Note 1.— The planned final reserve fuel refers to the value calculated in 2.3.6 and 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, the area to be overflown (i.e. with respect to the availability of precautionary landing areas), meteorological conditions and other reasonable contingencies.

Note 3.— The words "MAYDAY FUEL" describe the nature of the distress conditions as required in Annex 10, Volume II, 5.3.2.1.1, b) 3.

2.5 DUTIES OF PILOT-IN-COMMAND

2.5.1 The pilot-in-command shall be responsible for the operation and safety of the helicopter and for the safety of all crew members, passengers 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.

2.5.2 The pilot-in-command shall ensure that the checklists specified in 2.2.6 are complied with in detail.

2.5.3 The pilot-in-command 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.

Note.— A definition of the term "serious injury" is contained in Annex 13.

2.5.4 The pilot-in-command shall be responsible for reporting all known or suspected defects in the helicopter, to the operator, at the termination of the flight.

2.5.5 The pilot-in-command shall be responsible for the journey log book or the general declaration containing the information listed in 9.4.1.

Note.— By virtue of Resolution A10-36 of the Tenth Session of the Assembly (Caracas, June–July 1956) "the general declaration, [described in Annex 9] when prepared so as to contain all the information required by Article 34 [of the Convention on International Civil Aviation] with respect to the journey log book, may be considered by Contracting States to be an acceptable form of journey log book".

2.6 DUTIES OF FLIGHT OPERATIONS OFFICER/FLIGHT DISPATCHER

2.6.1 A flight operations officer/flight dispatcher in conjunction with a method of control and supervision of flight operations in accordance with 2.2.1.3 shall:

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

b) assist the pilot-in-command in preparing the operational flight plan and the flight plan to be filed;

c) when applicable, assist the pilot-in-command in preparing the preliminary flight plan, and submit it to a unit designated by the appropriate ATS authority;

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

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

Note 1.— The requirements for flight plans are contained in Annex 2 — Rules of the Air *and the procedures relating to flight plans and associated services are contained in the* Procedures for Air Navigation Services — Air Traffic Management *(PANS-ATM, Doc 4444).*

Note 2.— Detailed guidance on the use of the FF-ICE services, including the use of a preliminary flight plan, can be found in the Manual on Flight and Flow — Information for a Collaborative Environment (FF-ICE) *(Doc 9965).*

2.6.2 In the event of an emergency, a flight operations officer/flight dispatcher shall:

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

b) 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 operations officer/flight dispatcher during the course of a flight, particularly in the context of emergency situations.

2.7 CARRY-ON BAGGAGE

The operator shall ensure that all baggage carried onto a helicopter and taken into the passenger cabin is adequately and securely stowed.

2.8 FATIGUE MANAGEMENT

Note.— Guidance on the development and implementation of fatigue management regulations is contained in the Manual for the Oversight of Fatigue Management Approaches *(Doc 9966).*

2.8.1 The State of the Operator shall establish regulations for the purpose of managing fatigue. These regulations shall be based upon scientific principles, knowledge and operational experience with the aim of ensuring that flight and cabin crew members are performing at an adequate level of alertness. Accordingly, the State shall establish:

a) prescriptive regulations for flight time, flight duty period and duty period limitations and rest period requirements; and

b) where authorizing an operator to use a fatigue risk management system (FRMS), FRMS regulations in accordance with Appendix 7.

2.8.2 The State of the Operator shall require that the operator, in compliance with 2.8.1 and for the purposes of managing its fatigue-related safety risks, establish one of the following:

a) flight time, flight duty period, duty period limitations and rest period requirements that are within the prescriptive fatigue management regulations established by the State of the Operator; or

b) an FRMS in compliance with regulations established by the State of the Operator for all operations; or

c) an FRMS in compliance with regulations established by the State of the Operator for a defined part of its operations with the remainder of its operations in compliance with the prescriptive fatigue management regulations established by the State of the Operator.

Note.— Complying with the prescriptive fatigue management regulations does not relieve the operator of the responsibility to manage its risks, including fatigue-related risks, using its safety management system (SMS) in accordance with the provisions of Annex 19.

2.8.3 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 by the State of the Operator.

2.8.4 Where the operator complies with prescriptive fatigue management regulations in the provision of part or all of its services, the State of the Operator:

a) shall require that the operator familiarize those personnel involved in managing fatigue with their responsibilities and the principles of fatigue management;

b) 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.

2.8.5 Where the operator implements an FRMS to manage fatigue-related safety risks in the provision of part or all of its services, the State of the Operator shall:

a) require the operator to have processes to integrate FRMS functions with its other safety management functions;

b) require that the operator establish maximum values for flight times, flight duty periods and duty periods, and minimum values for rest periods; and

c) 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.

CHAPTER 3. HELICOPTER PERFORMANCE OPERATING LIMITATIONS

3.1 GENERAL

3.1.1 Helicopters shall be operated in accordance with a code of performance established by the State of the Operator, in compliance with the applicable Standards of this chapter.

Note 1.— The code of performance reflects, for the conduct of operations, both the various phases of flight and the operational environment. The Helicopter Code of Performance Development Manual *(Doc 10110) provides guidance to assist States in establishing a code of performance.*

Note 2.— Concerning compliance with codes of performance, Chapter 1 of this Section requires operators to comply with the laws, regulations and procedures of the States in which their helicopters are operated. Article 11 of the Convention forms the basis for this requirement.

3.1.2 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.

3.1.3 Notwithstanding the provisions of 3.1.2, 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 the Code of Performance established in accordance with the provisions of 3.1.1. The risk assessment shall take into consideration at least the following:

a) the type and circumstances of the operation;

b) the area/terrain over which the operation is being conducted;

c) the probability of, and length of exposure to, a critical engine failure and the tolerability of such an event;

d) the procedures and systems for monitoring and maintaining the reliability of the engine(s);

e) the training and operational procedures to mitigate the consequences of the critical engine failure; and

f) 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 Doc 10110.

3.1.4 Where the State of the Operator permits IMC operations in performance Class 3, such operations shall be conducted in accordance with the provisions of 3.4.

3.1.5 **Recommendation.—** *For helicopters for which Part IV of Annex 8 is not applicable because of the exemption provided for in Article 41 of the Convention, the State of the Operator should ensure that the level of performance specified in 3.2 is met as far as practicable.*

3.2 APPLICABLE TO HELICOPTERS CERTIFICATED IN ACCORDANCE WITH PART IV OF ANNEX 8

3.2.1 The Standards contained in 3.2.2 to 3.2.7 inclusive are applicable to the helicopters to which Part IV of Annex 8 is applicable.

Note.— The following Standards do not include quantitative specifications comparable to those found in national airworthiness codes. In accordance with 3.1.1, they are to be supplemented by national requirements prepared by Contracting States.

3.2.2 The level of performance defined by the appropriate parts of the code of performance referred to in 3.1.1 for the helicopters designated in 3.2.1 shall be consistent with the overall level embodied in the Standards of this chapter.

Note.— Guidance on the level of performance intended by the Standards and Recommended Practices of this chapter is contained in Doc 10110.

3.2.3 A helicopter shall be operated in compliance with the terms of its certificate of airworthiness and within the approved operating limitations contained in its flight manual.

3.2.4 The State of the Operator 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 this chapter.

3.2.5 A flight shall not be commenced unless the performance information provided in the flight manual indicates that the Standards of 3.2.6 and 3.2.7 can be complied with for the flight to be undertaken.

3.2.6 In applying the Standards of this chapter, account shall be taken of all factors that significantly affect the performance of the helicopter (such as: mass, operating procedures, the pressure-altitude appropriate to the elevation of the operating site, temperature, wind and condition of the surface). Such factors shall be taken into account directly as operational parameters or indirectly by means of allowances or margins, which may be provided in the scheduling of performance data or in the code of performance in accordance with which the helicopter is being operated.

3.2.7 Mass limitations

a) The mass of the helicopter at the start of take-off shall not exceed the mass at which the code of performance referred to in 3.1.1 is complied with, allowing for expected reductions in mass as the flight proceeds and for such fuel jettisoning as is appropriate.

b) In no case shall the mass at the start of take-off exceed the maximum take-off mass specified in the helicopter flight manual taking into account the factors specified in 3.2.6.

c) In no case shall the estimated mass for the expected time of landing at the destination and at any alternate exceed the maximum landing mass specified in the helicopter flight manual taking into account the factors specified in 3.2.6.

d) 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 in Annex 16, Volume I unless otherwise authorized, 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.

3.2.7.1 *Take-off and initial climb phase*

3.2.7.1.1 *Operations in performance Class 1*. The helicopter shall be able, in the event of the failure of the critical engine being recognized at or before the take-off decision point, to discontinue the take-off and stop within the rejected take-off area available or, in the event of the failure of the critical engine being recognized at or after the take-off decision point, to continue the take-off, clearing all obstacles along the flight path by an adequate margin until the helicopter is in a position to comply with 3.2.7.2.1.

3.2.7.1.2 *Operations in performance Class 2.* The helicopter shall be able, in the event of the failure of the critical engine at any time after reaching DPATO, to continue the take-off, clearing all obstacles along the flight path by an adequate margin until the helicopter is in a position to comply with 3.2.7.2.1. Before the DPATO, failure of the critical engine may cause the helicopter to force-land; therefore the conditions stated in 3.1.2 shall apply.

3.2.7.1.3 *Operations in performance Class 3.* At any point of the flight path, failure of an engine will cause the helicopter to force-land; therefore, the conditions stated in 3.1.2 shall apply.

3.2.7.2 *En-route phase*

3.2.7.2.1 *Operations in performance Classes 1 and 2.* The helicopter shall be able, in the event of the failure of the critical engine at any point in the en-route phase, to continue the flight to a site at which the conditions of 3.2.7.3.1 for operations in performance Class 1, or the conditions of 3.2.7.3.2 for operations in performance Class 2, can be met without flying below the appropriate minimum flight altitude at any point.

Note.— When the en-route phase is conducted over a hostile environment and the diversion time to an alternate would exceed two hours, it is recommended that the State of the Operator assess the risks associated with a second engine failure.

3.2.7.2.2 *Operations in performance Class 3.* The helicopter shall be able, with all engines operating, to continue along its intended route or planned diversions without flying at any point below the appropriate minimum flight altitude. At any point of the flight path, failure of an engine will cause the helicopter to force-land; therefore, the conditions stated in 3.1.2 shall apply.

3.2.7.3 *Approach and landing phase*

3.2.7.3.1 *Operations in performance Class 1*. In the event of the failure of the critical engine being recognized at any point during the approach and landing phase, before the landing decision point, the helicopter shall, at the destination and at any alternate, after clearing all obstacles in the approach path, be able to land and stop within the landing distance available or to perform a balked landing and clear all obstacles in the flight path by an adequate margin equivalent to that specified in 3.2.7.1.1. In case of the failure occurring after the landing decision point, the helicopter shall be able to land and stop within the landing distance available.

3.2.7.3.2 *Operations in performance Class 2.* In the event of the failure of the critical engine before the DPBL, the helicopter shall, at the destination and at any alternate, after clearing all obstacles in the approach path, be able either to land and stop within the landing distance available or to perform a balked landing and clear all obstacles in the flight path by an adequate margin equivalent to that specified in 3.2.7.1.2. After the DPBL, failure of an engine may cause the helicopter to force-land; therefore, the conditions stated in 3.1.2 shall apply.

3.2.7.3.3 *Operations in performance Class 3.* At any point of the flight path, failure of an engine will cause the helicopter to force-land; therefore, the conditions stated in 3.1.2 shall apply.

3.3 OBSTACLE DATA

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 code of performance established by the State of the Operator.

3.4 ADDITIONAL REQUIREMENTS FOR OPERATIONS OF HELICOPTERS IN PERFORMANCE CLASS 3 IN IMC, EXCEPT SPECIAL VFR FLIGHTS

3.4.1 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.

3.4.2 In approving operations by helicopters operating in performance Class 3 in IMC, the State of the Operator shall ensure that the helicopter is certificated for flight under IFR and that the overall level of safety intended by the provisions of Annexes 6 and 8 is provided by:

a) the reliability of the engines;

b) the operator's maintenance procedures, operating practices and crew training programmes; and

c) equipment and other requirements provided in accordance with Appendix 2.

Note.— Guidance on additional requirements for operations of helicopters in performance Class 3 in IMC is contained in Appendix 2.

3.4.3 Operators of helicopters operating in performance Class 3 in IMC shall have a programme for engine trend monitoring and shall utilize the engine and helicopter manufacturers' recommended instruments, systems and operational/ maintenance procedures to monitor the engines.

3.4.4 **Recommendation**.— *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.*

CHAPTER 4. HELICOPTER INSTRUMENTS, EQUIPMENT AND FLIGHT DOCUMENTS

Note.— Specifications for the provision of helicopter communication and navigation equipment are contained in Chapter 5.

4.1 GENERAL

4.1.1 In addition to the minimum equipment necessary for the issuance of a certificate of airworthiness, the instruments, equipment and flight documents prescribed in the following paragraphs 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 State of Registry.

4.1.2 A helicopter shall carry a certified true copy of the air operator certificate specified in 2.2.1, and a copy of the operations specifications relevant to the helicopter type, issued in conjunction with the certificate. When the certificate and the associated operations specifications are issued by the State of the Operator in a language other than English, an English translation shall be included.

Note.— Provisions for the content of the air operator certificate and its associated operations specifications are contained in 2.2.1.5 and 2.2.1.6.

4.1.3 The operator shall include in the operations manual a minimum equipment list (MEL), approved by the State of the Operator which will enable the pilot-in-command to determine whether a flight may be commenced or continued from any intermediate stop should any instrument, equipment or systems become inoperative. Where the State of the Operator is not the State of Registry, the State of the Operator shall ensure that the MEL does not affect the helicopter's compliance with the airworthiness requirements applicable in the State of Registry.

Note.— Attachment B contains guidance on the minimum equipment list.

4.1.4 The operator shall make available to operations staff and crew members an aircraft operating manual, for each aircraft type operated, containing the normal, abnormal and emergency procedures relating to the operation of the aircraft. The manual shall include details of the aircraft systems and of the checklists to be used. The design of the manual shall observe Human Factors principles. The manual shall be easily accessible to the flight crew during all flight operations.

Note.— Guidance material on the application of Human Factors principles can be found in the Human Factors Training Manual *(Doc 9683).*

4.1.5 Helicopter operated under an Article 83 *bis* agreement

Note.— Guidance concerning the transfer of responsibilities by the State of Registry to the State of the Operator in accordance with Article 83 bis *is contained in the* Manual on the Implementation of Article 83 *bis* of the Convention on International Civil Aviation *(Doc 10059)*.

4.1.5.1 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.

Note.— Guidance regarding the agreement summary is contained in Doc 10059.

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

Note.— Guidance for the civil aviation safety inspector conducting an inspection of an aeroplane operated under an Article 83 bis *agreement is contained in the* Manual of Procedures for Operations Inspection, Certification and Continued Surveillance *(Doc 8335).*

4.1.5.3 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 as per 4.1.5.1. will need to list only the specific aircraft carrying the copy.*

4.1.5.4 **Recommendation**.—*The agreement summary should contain the information in Appendix 7 for the specific aircraft and should follow the layout of Appendix 7, paragraph 2.*

4.2 ALL HELICOPTERS ON ALL FLIGHTS

4.2.1 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.

4.2.2 A helicopter shall be equipped with:

a) accessible and adequate medical supplies;

Recommendation.— *Medical supplies should comprise:*

1) a first-aid kit; and

2) for helicopters required to carry cabin crew as part of the operating crew, a universal precaution kit, for the use of cabin crew in managing incidents of ill health associated with a case of suspected communicable disease, or in the case of illness involving contact with body fluids.

Note.— Guidance on the contents of first-aid and universal precaution kits is given in Attachment A.

b) 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.

Note 1.— Any portable fire extinguisher so fitted in accordance with the certificate of airworthiness of the helicopter may count as one prescribed.

Note 2.— Refer to 4.2.2.1 for fire extinguishing agents.

c) 1) a seat or berth for each person over an age to be determined by the State of the Operator;

2) a seat belt for each seat and restraining belts for each berth; and

3) a safety harness for each flight crew seat. The safety harness for each pilot seat shall incorporate a device which will automatically restrain the occupant's torso in the event of rapid deceleration.

Recommendation.— *When dual controls are fitted, the safety harness for each pilot seat should incorporate a restraining device to prevent the upper body of an incapacitated occupant from interfering with the flight controls.*

Note 1.— Depending on the design, the lock on an inertia reel device may suffice for this purpose.

Note 2.— Safety harness includes shoulder straps and a seat belt which may be used independently.

d) means of ensuring that the following information and instructions are conveyed to passengers:

1) when seat belts or harnesses are to be fastened;

2) when and how oxygen equipment is to be used if the carriage of oxygen is required;

3) restrictions on smoking;

4) location and use of life jackets or equivalent individual flotation devices where their carriage is required; and

5) location and method of opening emergency exits; and

e) if fuses are used, spare electrical fuses of appropriate ratings for replacement of those accessible in flight.

4.2.2.1 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 2018, 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.

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.

4.2.3 A helicopter shall carry:

a) the operations manual prescribed in 2.2.2, or those parts of it that pertain to flight operations;

b) the helicopter flight manual for the helicopter, or other documents containing performance data required for the application of Chapter 3 and any other information necessary for the operation of the helicopter within the terms of its certificate of airworthiness, unless these data are available in the operations manual; and

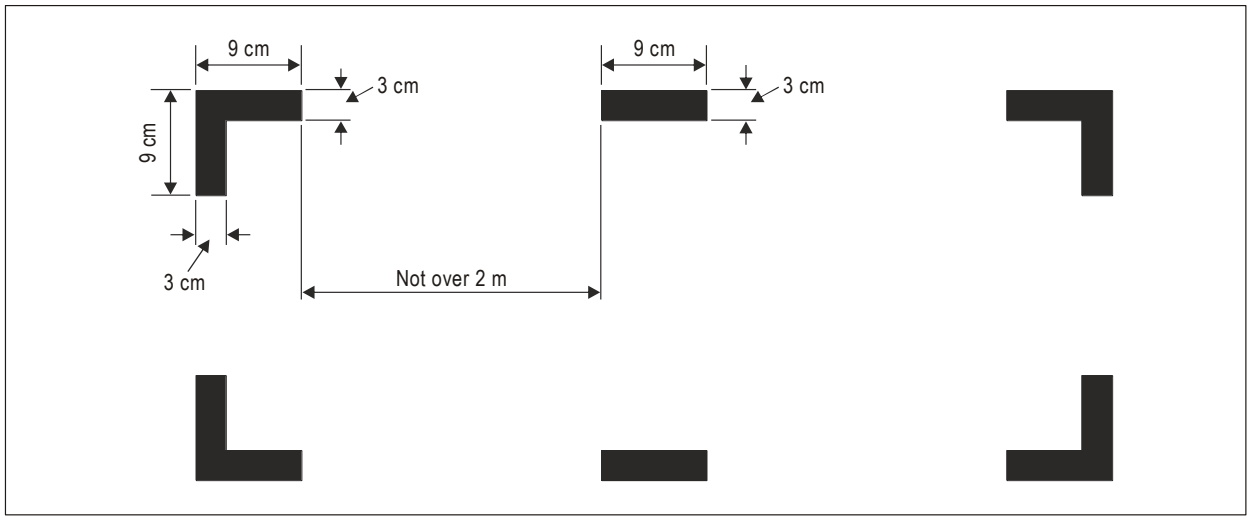
c) current and suitable charts to cover the route of the proposed flight and any route along which it is reasonable to expect that the flight may be diverted.

4.2.4 Marking of break-in points

4.2.4.1 If areas of the fuselage suitable for break-in by rescue crews in an emergency are marked on a helicopter, such areas shall be marked as shown below (see figure following). The colour of the markings shall be red or yellow and, if necessary, they shall be outlined in white to contrast with the background.

4.2.4.2 If the corner markings are more than 2 m apart, intermediate lines 9 cm × 3 cm shall be inserted so that there is no more than 2 m between adjacent markings.

Note.— This Standard does not require any helicopter to have break-in areas.



MARKING OF BREAK-IN POINTS (see 4.2.4)

4.3 FLIGHT RECORDERS

Note 1.— Crash-protected flight recorders comprise one or more of the following:

— *a flight data recorder (FDR),*
— *a cockpit voice recorder (CVR),*
— *an airborne image recorder (AIR),*
— *a data link recorder (DLR).*

As per Appendix 4, image and data link information may be recorded on either the CVR or the FDR.

Note 2.— Combination recorders (FDR/CVR) may be used to meet the flight recorder equipage requirements in this Annex.

Note 3.— Detailed requirements on flight recorders are contained in Appendix 4.

Note 4.— Lightweight flight recorders comprise one or more of the following:

- *an aircraft data recording system (ADRS),*
- *a cockpit audio recording system (CARS),*
- *an airborne image recording system (AIRS),*
- *a data link recording system (DLRS)*

As per Appendix 4, image and data link information may be recorded on either the CARS or the ADRS.

Note 5.— For helicopters for which the application for type certification is submitted to a Contracting State before 1 January 2016, specifications applicable to crash-protected flight recorders may be found in EUROCAE ED-112, ED-56A, ED-55, Minimum Operational Performance Specification (MOPS), or earlier equivalent documents.

Note 6.— For helicopters for which the application for type certification is submitted to a Contracting State on or after 1 January 2016, specifications applicable to crash-protected flight recorders may be found in EUROCAE ED-112A, Minimum Operational Performance Specification (MOPS), or equivalent documents.

Note 7.— Specifications applicable to lightweight flight recorders may be found in EUROCAE ED-155, Minimum Operational Performance Specification (MOPS), or equivalent documents.

Note 8.— Chapter 1 contains requirements for States regarding the use of voice, image and/or data recordings and transcripts.

4.3.1 Flight data recorders and aircraft data recording systems

Note .— Parameters to be recorded are listed in Table A4-1 of Appendix 4.

4.3.1.1 *Applicability*

4.3.1.1.1 All helicopters of a maximum certificated take-off mass of over 3 175 kg for which the individual certificate of airworthiness is first issued on or after 1 January 2016 shall be equipped with an FDR which shall record at least the first 48 parameters listed in Table A4-1 of Appendix 4.

4.3.1.1.2 All helicopters of a maximum certificated take-off mass of over 7 000 kg, or having a passenger seating configuration of more than nineteen, for which the individual certificate of airworthiness is first issued on or after 1 January 1989 shall be equipped with an FDR which shall record at least the first 30 parameters listed in Table A4-1 of Appendix 4.

4.3.1.1.3 **Recommendation.—** *All helicopters of a maximum certificated take-off mass of over 3 175 kg, up to and including 7 000 kg, for which the individual certificate of airworthiness is first issued on or after 1 January 1989, should be equipped with an FDR which should record at least the first 15 parameters listed in Table A4-1 of Appendix 4.*

4.3.1.1.4 All turbine-engined helicopters of a maximum certificated take-off mass of over 2 250 kg, up to and including 3 175 kg, for which the application for type certification was submitted to a Contracting State on or after 1 January 2018, shall be equipped with:

a) an FDR which shall record at least the first 48 parameters listed in Table A4-1 of Appendix 4; or

b) 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 4, Table A4-3; or

c) an ADRS which shall record the first 7 parameters listed in Table A4-3 of Appendix 4.

Note.— The "application for type certification was 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.

4.3.1.1.5 **Recommendation.—** *All helicopters of a maximum certificated take-off mass of 3 175 kg or less for which the individual certificate of airworthiness is first issued on or after 1 January 2018 should be equipped with:*

a) an FDR which should record at least the first 48 parameters listed in Table A4-1 of Appendix 4; or

b) a Class C AIR or AIRS which should record at least the flight path and speed parameters displayed to the pilot(s), as defined in Appendix 4, Table A4-3; or

c) an ADRS which should record the first 7 parameters listed in Table A4-3 of Appendix 4.

Note.— AIR or AIRS classification is defined in 4.1 of Appendix 4.

4.3.1.1.6 All helicopters of a maximum certificated take-off mass of over 3 175 kg for which the application for type certificate is submitted to a Contracting State on or after 1 January 2023 shall be equipped with an FDR capable of recording at least the first 53 parameters listed in Table A4-1 of Appendix 4.

4.3.1.1.7 **Recommendation**.— *All helicopters of a maximum certificated take-off mass of over 3 175 kg for which the individual certificate of airworthiness is first issued on or after 1 January 2023 should be equipped with an FDR capable of recording at least the first 53 parameters listed in Table A4-1 of Appendix 4.*

4.3.1.2 *Recording technology*

FDRs, ADRS, AIRs or AIRS shall not use engraving metal foil, frequency modulation (FM), photographic film or magnetic tape.

4.3.1.3 *Duration*

All FDRs shall retain the information recorded during at least the last 10 hours of their operation.

4.3.2 Cockpit voice recorders and cockpit audio recording systems

4.3.2.1 *Applicability*

4.3.2.1.1 All helicopters of a maximum certificated take-off mass of over 7 000 kg shall be equipped with a CVR. For helicopters not equipped with an FDR, at least main rotor speed shall be recorded on the CVR.

4.3.2.1.2 **Recommendation.—** *All helicopters of a maximum certificated take-off mass of over 3 175 kg for which the individual certificate of airworthiness is first issued on or after 1 January 1987 should be equipped with a CVR. For helicopters not equipped with an FDR, at least main rotor speed should be recorded on the CVR.*

4.3.2.2 *Recording technology*

CVRs and CARS shall not use magnetic tape or wire.

4.3.2.3 *Duration*

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 two hours of its operation.

4.3.3 Data link recorders

4.3.3.1 *Applicability*

4.3.3.1.1 All helicopters for which the individual certificate of airworthiness is first issued on or after 1 January 2016, which use any of the data link communications applications referred to in 5.1.2 of Appendix 4 and are required to carry a CVR, shall record the data link communications messages on a crash-protected flight recorder.

4.3.3.1.2 All helicopters for which the individual certificate of airworthiness was first issued before 1 January 2016 that are required to carry a CVR, and are modified on or after 1 January 2016 to use any of the data link communications applications referred to in 5.1.2 of Appendix 4, shall record the data link communications messages on a crash-protected flight recorder unless the installed data link communications equipment is compliant with a type design or aircraft modification first approved prior to 1 January 2016.

Note 1.— Refer to Table F-4 in Attachment F for examples of data link communication recording requirements.

Note 2.— A Class B AIR could be a means for recording data link communications applications messages to and from the helicopters where it is not practical or is prohibitively expensive to record those data link communications applications messages on FDR or CVR.

Note 3.— The "aircraft modifications" refer to modifications to install the data link communications equipment on the aircraft (e.g. structural, wiring).

4.3.3.1.3 **Recommendation**.— *All helicopters for which the individual certificate of airworthiness was first issued before 1 January 2016, that are required to carry a CVR and are modified on or after 1 January 2016 to use any of the data link communications applications referred to in 5.1.2 of Appendix 4 should record the data link communications messages on a crash-protected flight recorder.*

4.3.3.2 *Duration*

The minimum recording duration shall be equal to the duration of the CVR.

4.3.3.3 *Correlation*

Data link recording shall be able to be correlated to the recorded cockpit audio.

4.3.4 Flight recorders — general

4.3.4.1 *Construction and installation*

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.

4.3.4.2 *Operation*

4.3.4.2.1 Flight recorders shall not be switched off during flight time.

4.3.4.2.2 To preserve flight recorder records, flight recorders shall be deactivated upon completion of flight time following an accident or incident. The flight recorders shall not be reactivated before their disposition as determined in accordance with Annex 13.

Note 1.— The need for removal of the flight recorder records from the aircraft will be determined by the investigation authority in the State conducting the investigation with due regard to the seriousness of an occurrence and the circumstances, including the impact on the operation.

Note 2.— The operator's responsibilities regarding the retention of flight recorder records are contained in Section II, Chapter 9, 9.6.

4.3.4.3 *Continued serviceability*

Operational checks and evaluations of recordings from the flight recorder systems shall be conducted to ensure the continued serviceability of the recorders.

Note.— Procedures for the inspections of the flight recorder systems are given in Appendix 4.

4.3.4.4 *Flight recorders electronic documentation*

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

Note.— Industry specification for documentation concerning flight recorder parameters may be found in the ARINC 647A, Flight Recorder Electronic Documentation*, or equivalent document.*

4.4 INSTRUMENTS AND EQUIPMENT FOR FLIGHTS OPERATED UNDER VFR AND IFR — BY DAY AND NIGHT

Note.— The flight instruments requirements in 4.4.1, 4.4.2 and 4.4.3 may be met by combinations of instruments or by electronic displays.

4.4.1 All helicopters when operating in accordance with VFR by day shall be equipped with:

a) a magnetic compass;

b) an accurate timepiece indicating the time in hours, minutes and seconds;

c) a sensitive pressure altimeter;

d) an airspeed indicator; and

e) such additional instruments or equipment as may be prescribed by the appropriate authority.

4.4.2 All helicopters when operating in accordance with VFR at night shall be equipped with:

a) the equipment specified in 4.4.1;

b) an attitude indicator (artificial horizon) for each required pilot and one additional attitude indicator;

c) a slip indicator;

d) a heading indicator (directional gyroscope);

e) a rate of climb and descent indicator;

f) such additional instruments or equipment as may be prescribed by the appropriate authority;

and the following lights:

g) the lights required by Annex 2 for aircraft in flight or operating on the movement area of a heliport;

Note.— The general characteristics of lights are specified in Annex 8.

h) two landing lights;

i) illumination for all instruments and equipment that are essential for the safe operation of the helicopter that are used by the flight crew;

j) lights in all passenger compartments; and

k) a flashlight for each crew member station.

4.4.2.1 **Recommendation.**— *One of the landing lights should be trainable, at least in the vertical plane.*

4.4.3 All helicopters when operating in accordance with IFR, or when the helicopter cannot be maintained in a desired attitude without reference to one or more flight instruments, shall be equipped with:

a) a magnetic compass;

b) an accurate timepiece indicating the time in hours, minutes and seconds;

c) two sensitive pressure altimeters;

d) an airspeed indicating system with means of preventing malfunctioning due to either condensation or icing;

e) a slip indicator;

f) an attitude indicator (artificial horizon) for each required pilot and one additional attitude indicator;

g) a heading indicator (directional gyroscope);

h) a means of indicating whether the power supply to the gyroscope instrument is adequate;

i) a means of indicating on the flight deck the outside air temperature;

j) a rate of climb and descent indicator;

k) a stabilization system, unless it has been demonstrated to the satisfaction of the certificating authority that the helicopter possesses, by nature of its design, adequate stability without such a system;

l) such additional instruments or equipment as may be prescribed by the appropriate authority; and

m) if operated at night, the lights specified in 4.4.2 g) to k) and 4.4.2.1.

4.4.3.1 All helicopters when operating in accordance with IFR shall be fitted with an emergency power supply, independent of the main electrical generating system, for the purpose of operating and illuminating, for a minimum period of 30 minutes, an attitude indicating instrument (artificial horizon), clearly visible to the pilot-in-command. The emergency power supply shall be automatically operative after the total failure of the main electrical generating system and clear indication shall be given on the instrument panel that the attitude indicator(s) is being operated by emergency power.

4.4.4 **Recommendation.—** *A helicopter when operating in accordance with IFR and which has a maximum certificated take-off mass in excess of 3 175 kg, or a maximum passenger seating configuration of more than 9, should be equipped with a ground proximity warning system which has a forward-looking terrain avoidance function.*

4.5 ALL HELICOPTERS ON FLIGHTS OVER WATER

4.5.1 Means of flotation

All helicopters intended to be flown over water shall be fitted with a permanent or rapidly deployable means of flotation so as to ensure a safe ditching of the helicopter when:

a) engaged in offshore operations, or other overwater operations as prescribed by the State of the Operator; or

b) flying over water in a hostile environment at a distance from land corresponding to more than 10 minutes at normal cruise speed when operating in performance Class 1 or 2; or

Note.— When operating in a hostile environment, a safe ditching requires a helicopter to be designed for landing on water or certificated in accordance with ditching provisions.

c) flying over water in a non-hostile environment at a distance from land specified by the appropriate authority of the responsible State when operating in performance Class 1; or

Note.— When considering the distance beyond which flotation equipment is required, the State should take into consideration the certification standard of the helicopter.

d) flying over water beyond autorotational or safe forced landing distance from land when operating in performance Class 3.

4.5.2 Emergency equipment

4.5.2.1 Helicopters operating in performance Class 1 or 2 and operating in accordance with the provisions of 4.5.1 shall be equipped with:

a) 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. 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) life-saving rafts in sufficient numbers to carry all persons on board, stowed so as to facilitate their ready use in emergency, provided with such life-saving equipment including means of sustaining life as is appropriate to the flight to be undertaken. When two life rafts are fitted, each shall be able to carry all occupants in the overload state; and

c) equipment for making the pyrotechnical distress signals described in Annex 2.

Note.— The life raft overload state has a design safety margin of 1.5 times the maximum capacity.

4.5.2.2 Helicopters operating in performance Class 3 when operating beyond autorotational distance from land but within a distance from land specified by the appropriate authority of the responsible State 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.

Note.— When determining the distance from land referred to in 4.5.2.2, consideration should be given to environmental conditions and the availability of search and rescue facilities.

4.5.2.2.1 For offshore operations, 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**.**

4.5.2.3 Helicopters operating in performance Class 3 when operating beyond the distance specified in 4.5.2.2 shall be equipped as in 4.5.2.1.

4.5.2.4 In the case of helicopters operating in performance Class 2 or 3, when taking off or landing at a heliport where, in the opinion of the State of the Operator, 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 4.5.2.1 a) shall be carried.

4.5.2.5 Each life jacket and equivalent individual flotation device, when carried in accordance with 4.5, shall be equipped with a means of electric illumination for the purpose of facilitating the location of persons.

4.5.2.6 **Recommendation.—** *On any helicopter for which the individual certificate of airworthiness is first issued on or after 1 January 1991, at least 50 per cent of the life rafts carried in accordance with the provisions of 4.5.2 should be deployable by remote control.*

4.5.2.7 **Recommendation.—** *Rafts which are not deployable by remote control and which have a mass of more than 40 kg should be equipped with some means of mechanically assisted deployment.*

4.5.2.8 **Recommendation.—** *On any helicopter for which the individual certificate of airworthiness was first issued before 1 January 1991, the provisions of 4.5.2.6 and 4.5.2.7 should be complied with no later than 31 December 1992.*

4.5.3 All helicopters on flights over designated sea areas

4.5.3.1 Helicopters, when operating over sea areas which have been designated by the State concerned as areas in which search and rescue would be especially difficult, shall be equipped with life-saving equipment (including means of sustaining life) as may be appropriate to the area overflown.

4.5.3.2 **Recommendation.—** *For offshore operations, a survival suit should be worn by all occupants when the sea temperature is less than 10°C or when the estimated rescue time exceeds the calculated survival time. When the elevation and strength of the sun results in a high temperature hazard on the flight deck, consideration should be given to alleviating the flight crew from this recommendation.*

Note.— When establishing rescue time, the sea state and the ambient light conditions should be taken into consideration.

4.6 ALL HELICOPTERS ON FLIGHTS OVER DESIGNATED LAND AREAS

Helicopters, when operated over land areas which have been designated by the State concerned as areas in which search and rescue would be especially difficult, shall be equipped with such signalling devices and life-saving equipment (including means of sustaining life) as may be appropriate to the area overflown.

4.7 EMERGENCY LOCATOR TRANSMITTER (ELT)

4.7.1 From 1 July 2008, all helicopters operating in performance Class 1 and 2 shall be equipped with at least one automatic ELT and, when operating on flights over water as described in 4.5.1 a), with at least one automatic ELT and one ELT(S) in a raft or life jacket.

4.7.2 From 1 July 2008, all helicopters operating in performance Class 3 shall be equipped with at least one automatic ELT and, when operating on flights over water as described in 4.5.1 b), with at least one automatic ELT and one ELT(S) in a raft or life jacket.

4.7.3 ELT equipment carried to satisfy the requirements of 4.7.1 and 4.7.2 shall operate in accordance with the relevant provisions of Annex 10, Volume III.

Note.— The judicious choice of numbers of ELTs, their type and placement on aircraft and associated floatable life support systems will ensure the greatest chance of ELT activation in the event of an accident for aircraft operating over water or land, including areas especially difficult for search and rescue. Placement of transmitter units is a vital factor in ensuring optimal crash and fire protection. The placement of the control and switching devices (activation monitors) of automatic fixed ELTs and their associated operational procedures will also take into consideration the need for rapid detection of inadvertent activation and convenient manual switching by crew members.

4.8 ALL HELICOPTERS ON HIGH ALTITUDE FLIGHTS

Note.— Approximate altitude in the Standard Atmosphere corresponding to the value of absolute pressure used in this text is as follows:

Absolute pressure	Metres	Feet
700 hPa	*3 000*	*10 000*
620 hPa	*4 000*	*13 000*
376 hPa	*7 600*	*25 000*

4.8.1 A helicopter intended to be operated at flight altitudes at which the atmospheric pressure is less than 700 hPa in personnel compartments shall be equipped with oxygen storage and dispensing apparatus capable of storing and dispensing the oxygen supplies required in 2.3.8.1.

4.8.2 A helicopter intended to be operated at flight altitudes at which the atmospheric pressure is less than 700 hPa, but which is provided with means of maintaining pressures greater than 700 hPa in personnel compartments, shall be provided with oxygen storage and dispensing apparatus capable of storing and dispensing the oxygen supplies required in 2.3.8.2.

4.8.3 A helicopter intended to be operated at flight altitudes at which the atmospheric pressure is less than 376 hPa or which, if operated at flight altitudes at which the atmospheric pressure is more than 376 hPa, cannot descend safely within four minutes to a flight altitude at which the atmospheric pressure is equal to 620 hPa, and for which the individual certificate of airworthiness was issued on or after 9 November 1998, shall be provided with automatically deployable oxygen equipment to satisfy the requirements of 2.3.8.2. The total number of oxygen dispensing units shall exceed the number of passenger and cabin crew seats by at least 10 per cent.

4.8.4 **Recommendation.—** *A helicopter intended to be operated at flight altitudes at which the atmospheric pressure is less than 376 hPa or which, if operated at flight altitudes at which the atmospheric pressure is more than 376 hPa, cannot descend safely within four minutes to a flight altitude at which the atmospheric pressure is equal to 620 hPa, and for which the individual certificate of airworthiness was issued before 9 November 1998, should be provided with automatically deployable oxygen equipment to satisfy the requirements of 2.3.8.2. The total number of oxygen dispensing units should exceed the number of passenger and cabin crew seats by at least 10 per cent.*

4.9 ALL HELICOPTERS IN ICING CONDITIONS

All helicopters shall be equipped with suitable anti-icing and/or de-icing devices when operated in circumstances in which icing conditions are reported to exist or are expected to be encountered.

4.10 HELICOPTERS WHEN CARRYING PASSENGERS — SIGNIFICANT-WEATHER DETECTION

Recommendation.— *Helicopters when carrying passengers should be equipped with operative weather radar or other significant-weather detection equipment whenever such helicopters are being operated in areas where thunderstorms or other potentially hazardous weather conditions, regarded as detectable, may be expected to exist along the route either at night or under instrument meteorological conditions.*

4.11 ALL HELICOPTERS REQUIRED TO COMPLY WITH THE NOISE CERTIFICATION STANDARDS IN ANNEX 16, VOLUME I

All helicopters required to comply with the noise certification Standards of Annex 16, Volume I shall carry a document attesting noise certification. When the document, or a suitable statement attesting noise certification as contained in another document approved by the State of Registry, is issued in a language other than English, it shall include an English translation.

Note 1.— The attestation may be contained in any document, carried on board, approved by the State of Registry in accordance with the relevant provisions of Annex 16, Volume I.

Note 2.— The various noise certification Standards of Annex 16, Volume I that are applicable to helicopters are determined according to the date of application for a type certificate, or the date of acceptance of an application under an equivalent prescribed procedure by the certificating authority. Some helicopters are not required to comply with any noise certification Standard. For details see Annex 16, Volume I, Part II, Chapters 8 and 11.

4.12 HELICOPTERS CARRYING PASSENGERS — CABIN CREW SEATS

4.12.1 All helicopters shall be equipped with a forward or rearward facing (within 15 degrees of the longitudinal axis of the helicopter) seat, fitted with a safety harness for the use of each cabin crew member required to satisfy the intent of 10.1 in respect of emergency evacuation.

Note 1.— In accordance with the provisions of 4.2.2 c) 1), a seat and seat belt shall be provided for the use of each additional cabin crew member.

Note 2.— Safety harness includes shoulder straps and a seat belt which may be used independently.

4.12.2 Cabin crew seats shall be located near floor level and other emergency exits as required by the State of Registry for emergency evacuation.

4.13 HELICOPTERS REQUIRED TO BE EQUIPPED WITH A PRESSURE-ALTITUDE REPORTING TRANSPONDER

Except as may be otherwise authorized by the appropriate authority, all helicopters shall be equipped with a pressure-altitude reporting transponder which operates in accordance with the provisions of Annex 10, Volume IV.

Note.— This provision is intended to support the effectiveness of ACAS as well as to improve the effectiveness of air traffic services. The intent is also for aircraft not equipped with pressure-altitude reporting transponders to be operated so as not to share airspace used by aircraft equipped with airborne collision avoidance systems.

4.14 MICROPHONES

All flight crew members required to be on flight deck duty shall communicate through boom or throat microphones.

4.15 VIBRATION HEALTH MONITORING SYSTEM

Recommendation.— *A helicopter which has a maximum certificated take-off mass in excess of 3 175 kg or a maximum passenger seating configuration of more than 9 should be equipped with a vibration health monitoring system.*

4.16 HELICOPTERS EQUIPPED WITH AUTOMATIC LANDING SYSTEMS, A HEAD-UP DISPLAY (HUD) OR EQUIVALENT DISPLAYS, ENHANCED VISION SYSTEMS (EVS), SYNTHETIC VISION SYSTEMS (SVS) AND/OR COMBINED VISION SYSTEMS (CVS)

Notwithstanding Chapter 2, 2.2.8.1.2 to 2.2.8.1.3, 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 approved by the State of the Operator.

Note 1.— Information regarding automatic landing systems, a HUD or equivalent displays, EVS, SVS or CVS is contained in the Manual of All-Weather Operations *(Doc 9365).*

Note 2.— 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.

4.17 ELECTRONIC FLIGHT BAGS (EFBs)

Note.— Guidance on EFB equipment, functions and specific approval is contained in the Manual on Electronic Flight Bags (EFBs) *(Doc 10020).*

4.17.1 EFB equipment

Where portable EFBs are used on board a helicopter, the operator shall ensure that they do not affect the performance of the helicopter systems, equipment or the ability to operate the helicopter.

4.17.2 EFB functions

4.17.2.1 Where EFBs are used on board a helicopter the operator shall:

a) assess the safety risk(s) associated with each EFB function;

b) establish and document the procedures for the use of, and training requirements for, the device and each EFB function; and

c) 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.

Note.— Guidance on safety risk assessments is contained in the Safety Management Manual *(Doc 9859).*

4.17.2.2 The State of the Operator shall issue a specific approval for the operational use of EFB functions to be used for the safe operation of helicopters.

4.17.3 EFB specific approval

When issuing a specific approval for the operational use of EFBs, the State of the Operator shall ensure that:

a) the EFB equipment and its associated installation hardware, including interaction with helicopter systems if applicable, meet the appropriate airworthiness certification requirements;

b) the operator has assessed the safety risks associated with the operations supported by the EFB function(s);

c) the operator has established requirements for redundancy of the information (if appropriate) contained and displayed by the EFB function(s);

d) the operator has established and documented procedures for the management of the EFB function(s) including any databases it may use; and

e) the operator has established and documented the procedures for the use of, and training requirements for the EFB function(s).

Note.— Guidance on safety risk assessments is contained in the Safety Management Manual *(Doc 9859).*

CHAPTER 5. HELICOPTER COMMUNICATION, NAVIGATION AND SURVEILLANCE EQUIPMENT

5.1 COMMUNICATION EQUIPMENT

5.1.1 A helicopter shall be provided with radio communication equipment capable of:

a) conducting two-way communication for heliport control purposes;

b) receiving meteorological information at any time during flight; and

c) conducting two-way communication at any time during flight with at least one aeronautical station and with such other aeronautical stations and on such frequencies as may be prescribed by the appropriate authority.

Note.— The requirements of 5.1.1 are considered fulfilled if the ability to conduct the communications specified therein is established during radio propagation conditions which are normal for the route.

5.1.2 The radio communication equipment required in accordance with 5.1.1 shall provide for communications on the aeronautical emergency frequency 121.5 MHz.

5.1.3 For operations where communication equipment is required to meet an RCP specification for performance-based communication (PBC), a helicopter shall, in addition to the requirements specified in 5.1.1:

a) be provided with communication equipment which will enable it to operate in accordance with the prescribed RCP specification(s);

b) have information relevant to the helicopter RCP specification capabilities listed in the flight manual or other helicopter documentation approved by the State of Design or State of Registry; and

c) have information relevant to the helicopter RCP specification capabilities included in the MEL.

Note.— Information on the performance-based communication and surveillance (PBCS) concept and guidance material on its implementation are contained in the Performance-based Communication and Surveillance (PBCS) Manual *(Doc 9869).*

5.1.4 The State of the Operator shall, for operations where an RCP specification for PBC has been prescribed, ensure that the operator has established and documented:

a) normal and abnormal procedures, including contingency procedures;

b) flight crew qualification and proficiency requirements, in accordance with appropriate RCP specifications;

c) a training programme for relevant personnel consistent with the intended operations; and

d) appropriate maintenance procedures to ensure continued airworthiness, in accordance with appropriate RCP specifications.

5.1.5 The State of the Operator shall ensure that, in respect of those helicopters mentioned in 5.1.3, adequate provisions exist for:

a) receiving the reports of observed communication performance issued by monitoring programmes established in accordance with Annex 11, Chapter 3, 3.3.5.2; and

b) taking immediate corrective action for individual helicopters, helicopter types or operators, identified in such reports as not complying with the RCP specification(s).

5.2 NAVIGATION EQUIPMENT

5.2.1 A helicopter shall be provided with navigation equipment which will enable it to proceed:

a) in accordance with its operational flight plan; and

b) in accordance with the requirements of air traffic services;

except when, if not so precluded by the appropriate authority, navigation for flights under VFR is accomplished by visual reference to landmarks.

5.2.2 For operations where a navigation specification for performance-based navigation (PBN) has been prescribed, a helicopter shall, in addition to the requirements specified in 5.2.1:

a) be provided with navigation equipment which will enable it to operate in accordance with the prescribed navigation specification(s); and

b) have information relevant to the helicopter navigation specification capabilities listed in the flight manual or other helicopter documentation approved by the State of Design or State of Registry; and

c) have information relevant to the helicopter navigation specification capabilities included in the MEL.

Note.— Guidance on helicopter documentation is contained in the Performance-based Navigation (PBN) Manual *(Doc 9613).*

5.2.3 The State of the Operator shall, for operations where a navigation specification for PBN has been prescribed, ensure that the operator has established and documented:

a) normal and abnormal procedures, including contingency procedures;

b) flight crew qualification and proficiency requirements, in accordance with the appropriate navigation specifications;

c) a training programme for relevant personnel consistent with the intended operations; and

d) appropriate maintenance procedures to ensure continued airworthiness, in accordance with appropriate navigation specifications.

Note 1.— Guidance on safety risks and mitigations for PBN operations, in accordance with Annex 19, are contained in the Performance-based Navigation (PBN) Operational Approval Manual *(Doc 9997).*

Note 2.— Electronic navigation data management is an integral part of normal and abnormal procedures.

5.2.4 The State of the Operator shall issue a specific approval for operations based on PBN authorization required (AR) navigation specifications.

Note.— Guidance on specific approvals for PBN authorization required (AR) navigation specifications is contained in the Performance-based Navigation (PBN) Operational Approval Manual *(Doc 9997).*

5.2.5 The helicopter shall be sufficiently provided with navigation equipment to ensure that, in the event of the failure of one item of equipment at any stage of the flight, the remaining equipment will enable the helicopter to navigate in accordance with 5.2.1 and, where applicable, 5.2.2.

5.2.6 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.

5.3 SURVEILLANCE EQUIPMENT

5.3.1 A helicopter shall be provided with surveillance equipment which will enable it to operate in accordance with the requirements of air traffic services.

5.3.2 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 5.3.1:

a) be provided with surveillance equipment which will enable it to operate in accordance with the prescribed RSP specification(s);

b) 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 State of Registry; and

c) have information relevant to the helicopter RSP specification capabilities included in the MEL.

Note 1.— Information on surveillance equipment is contained in the Aeronautical Surveillance Manual *(Doc 9924).*

Note 2.— Information on RSP specifications for performance-based surveillance is contained in the Performance-based Communication and Surveillance (PBCS) Manual *(Doc 9869).*

5.3.3 The State of the Operator shall, for operations where an RSP specification for PBS has been prescribed, ensure that the operator has established and documented:

a) normal and abnormal procedures, including contingency procedures;

b) flight crew qualification and proficiency requirements, in accordance with appropriate RSP specifications;

c) a training programme for relevant personnel consistent with the intended operations; and

d) appropriate maintenance procedures to ensure continued airworthiness, in accordance with appropriate RSP specifications.

5.3.4 The State of the Operator shall ensure that, in respect of those helicopters mentioned in 5.3.2, adequate provisions exist for:

a) receiving the reports of observed surveillance performance issued by monitoring programmes established in accordance with Annex 11, Chapter 3, 3.3.5.2; and

b) taking immediate corrective action for individual helicopter, helicopter types or operators, identified in such reports as not complying with the RSP specification(s).

5.4 INSTALLATION

The equipment installation shall be 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.

5.5 ELECTRONIC NAVIGATION DATA MANAGEMENT

5.5.1 The operator shall not employ electronic navigation data products that have been processed for application in the air and on the ground, unless the State of the Operator has approved the operator's procedures for ensuring that the process applied and the products delivered have met acceptable standards of integrity and that the products are compatible with the intended function of the existing equipment. The State of the Operator shall ensure that the operator continues to monitor both the process and products.

Note.— Guidance relating to the processes that data suppliers may follow is contained in RTCA DO200A/EUROCAE ED-76 and RTCA DO-201A/EUROCAE ED-77.

5.5.2 The operator shall implement procedures that ensure the timely distribution and insertion of current and unaltered electronic navigation data to all necessary aircraft.

CHAPTER 6. HELICOPTER CONTINUING AIRWORTHINESS

Note 1.— For the purpose of this chapter "helicopter" includes: engines, power transmissions, rotors, components, accessories, instruments, equipment and apparatus including emergency equipment.

Note 2.— Reference is made throughout this chapter to the requirements of the State of Registry. When the State of the Operator is not the same as the State of Registry, it may be necessary to consider any additional requirements of the State of the Operator.

Note 3.— Guidance on continuing airworthiness requirements is contained in the Airworthiness Manual *(Doc 9760).*

6.1 OPERATOR'S CONTINUING AIRWORTHINESS RESPONSIBILITIES

6.1.1 Operators shall ensure that, in accordance with procedures acceptable to the State of Registry:

a) each helicopter they operate is maintained in an airworthy condition;

b) the operational and emergency equipment necessary for the intended flight is serviceable; and

c) the certificate of airworthiness of the helicopter they operate remains valid.

6.1.2 The operator shall not operate a helicopter unless maintenance on the helicopter, including any associated engine, rotor and part, is carried out:

a) by an organization complying with Annex 8, Part II, Chapter 6 that is either approved by the State of Registry of the helicopter or is approved by another Contracting State and is accepted by the State of Registry; or

b) by a person or organization in accordance with procedures that are authorized by the State of Registry;

and there is a maintenance release in relation to the maintenance carried out.

6.1.3 The operator shall employ a person or group of persons to ensure that all maintenance is carried out in accordance with the maintenance control manual.

6.1.4 The operator shall ensure that the maintenance of its helicopters is performed in accordance with the maintenance programme approved by the State of Registry.

6.2 OPERATOR'S MAINTENANCE CONTROL MANUAL

6.2.1 The operator shall provide, for the use and guidance of maintenance and operational personnel concerned, a maintenance control manual, acceptable to the State of Registry, in accordance with the requirements of 9.2. The design of the manual shall observe Human Factors principles.

Note.— Guidance material on the application of Human Factors principles can be found in the Human Factors Training Manual *(Doc 9683).*

6.2.2 The operator shall ensure that the maintenance control manual is amended as necessary to keep the information contained therein up to date.

6.2.3 Copies of all amendments to the operator's maintenance control manual shall be furnished promptly to all organizations or persons to whom the manual has been issued.

6.2.4 The operator shall provide the State of the Operator and the State of Registry with a copy of the operator's maintenance control manual, together with all amendments and/or revisions to it and shall incorporate in it such mandatory material as the State of the Operator or the State of Registry may require.

6.3 MAINTENANCE PROGRAMME

6.3.1 The operator shall provide, for the use and guidance of maintenance and operational personnel concerned, a maintenance programme, approved by the State of Registry, containing the information required by 9.3. The design and application of the operator's maintenance programme shall observe Human Factors principles.

Note.— Guidance material on the application of Human Factors principles can be found in the Human Factors Training Manual *(Doc 9683)*.

6.3.2 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.

6.4 CONTINUING AIRWORTHINESS RECORDS

6.4.1 The operator shall ensure that the following records are kept for the periods mentioned in 6.4.2:

a) the total time in service (hours, calendar time and cycles, as appropriate) of the helicopter and all life-limited components;

b) the current status of compliance with all mandatory continuing airworthiness information;

c) appropriate details of modifications and repairs to the helicopter and its major components;

d) the time in service (hours, calendar time and cycles, as appropriate) since last overhaul of the helicopter or its components subject to a mandatory overhaul life;

e) the current status of the helicopter's compliance with the maintenance programme; and

f) the detailed maintenance records to show that all requirements for a maintenance release have been met.

6.4.2 The records in 6.4.1 a) to e) shall be kept for a minimum period of 90 days after the unit to which they refer has been permanently withdrawn from service, and the records in 6.4.1 f) for a minimum period of one year after the signing of the maintenance release.

6.4.3 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.

6.4.4 Records kept and transferred in accordance with 6.4 shall be maintained in a form and format that ensures readability, security and integrity of the records at all times.

Note 1.— The form and format of the records may include, for example, paper records, film records, electronic records or any combination thereof.

Note 2.— Guidance regarding electronic aircraft continuing airworthiness records is included in the Airworthiness Manual *(Doc 9760).*

6.5 CONTINUING AIRWORTHINESS INFORMATION

6.5.1 The operator of a helicopter over 3 175 kg maximum mass shall monitor and assess maintenance and operational experience with respect to continuing airworthiness and provide the information as prescribed by the State of Registry and report through the system specified in Annex 8, Part II, 4.2.3.1 f) and 4.2.4.

6.5.2 The operator of a helicopter over 3 175 kg maximum 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 State of Registry.

Note.— Guidance on interpretation of "the organization responsible for the type design" is contained in the Airworthiness Manual *(Doc 9760).*

6.6 MODIFICATIONS AND REPAIRS

All modifications and repairs shall comply with airworthiness requirements acceptable to the State of Registry. Procedures shall be established to ensure that the substantiating data supporting compliance with the airworthiness requirements are retained.

6.7 MAINTENANCE RELEASE

6.7.1 When maintenance is carried out by an approved maintenance organization, the maintenance release shall be issued by the approved maintenance organization in accordance with the provisions of Annex 8, Part II, 6.8.

6.7.2 When maintenance is not carried out by an approved maintenance organization, the maintenance release shall be completed and signed by a person appropriately licensed in accordance with Annex 1 to certify that the maintenance work performed has been completed satisfactorily and in accordance with approved data and the procedures acceptable to the State of Registry.

6.7.3 When maintenance is not carried out by an approved maintenance organization, the maintenance release shall include the following:

a) basic details of the maintenance carried out including detailed reference of the approved data used;

b) the date such maintenance was completed; and

c) the identity of the person or persons signing the release.

6.8 RECORDS

6.8.1 The operator shall ensure that the following records are kept:

a) in respect of the entire helicopter: the total time in service;

b) in respect of the major components of the helicopter:

1) the total time in service;

2) the date of the last overhaul; and

3) the date of the last inspection;

c) in respect of those instruments and equipment, the serviceability and operating life of which are determined by their time in service:

1) such records of the time in service as are necessary to determine their serviceability or to compute their operating life; and

2) the date of the last inspection.

6.8.2 These records shall be kept for a period of 90 days after the end of the operating life of the unit to which they refer.

CHAPTER 7. HELICOPTER FLIGHT CREW

7.1 COMPOSITION OF THE FLIGHT CREW

7.1.1 The number and composition of the flight crew shall not be less than that specified in the operations manual. The flight crews shall include flight crew members in addition to the minimum numbers specified in the 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.

7.1.2 The flight crew shall include at least one member authorized by the State of Registry to operate the type of radio transmitting equipment to be used.

Note.— Some States have dispensed with the system of issuing radio licences.

7.2 FLIGHT CREW MEMBER EMERGENCY DUTIES

The operator shall, for each type of helicopter, assign to all flight crew members 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.

7.3 FLIGHT CREW MEMBER TRAINING PROGRAMMES

7.3.1 The operator shall establish and maintain a ground and flight training programme, approved by the State of the Operator, 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 State of the Operator;

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) 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 State of the Operator, and shall include an assessment of competence.

Note 1.— Paragraph 2.2.5 prohibits the in-flight simulation of emergency or abnormal situations when passengers or cargo are being carried.

Note 2.— Flight training may, to the extent deemed appropriate by the State of the Operator, be given in flight simulation training devices approved by the State for that purpose.

Note 3.— The scope of the recurrent training required by 7.2 and 7.3 may be varied and need not be as extensive as the initial training given in a particular type of helicopter.

Note 4.— The use of correspondence courses and written examinations as well as other means may, to the extent deemed feasible by the State of the Operator, be utilized in meeting the requirements for periodic ground training.

Note 5.— For more information on dangerous goods operational requirements, see Chapter 12.

Note 6.— Guidance material to design training programmes to develop knowledge and skills in human performance can be found in the Human Factors Training Manual *(Doc 9683).*

Note 7.— Information for pilots and flight operations personnel on flight procedure parameters and operational procedures is contained in PANS-OPS (Doc 8168), Volume I. Criteria for the construction of visual and instrument flight procedures are contained in PANS-OPS (Doc 8168), Volume II. Obstacle clearance criteria and procedures used in certain States may differ from PANS-OPS, and knowledge of these differences is important for safety reasons.

Note 8.— Guidance material to design flight crew training programmes can be found in the Manual of Evidence-based Training *(Doc 9995).*

Note 9.— Guidance material on the different means used to assess competence can be found in the Attachment to Chapter 2 of the Procedures for Air Navigation Services — Training *(PANS-TRG, Doc 9868).*

7.3.2 The requirement for recurrent flight training in a particular type of helicopter shall be considered fulfilled by:

a) the use, to the extent deemed feasible by the State of the Operator, of flight simulation training devices approved by that State for that purpose; or

b) the completion within the appropriate period of the proficiency check required by 7.4.3 in that type of helicopter.

7.4 QUALIFICATIONS

Note.— See the Manual of Procedures for Establishment and Management of a State's Personnel Licensing System *(Doc 9379) for guidance of a general nature on cross-crew qualification, mixed-fleet flying and cross-credit.*

7.4.1 Recent experience — pilot-in-command and co-pilot

7.4.1.1 The operator shall not assign a pilot-in-command or a co-pilot to operate at the flight controls of a type or variant of a type of a helicopter during take-off and landing unless that pilot has operated the flight controls during at least three take-offs and landings within the preceding 90 days on the same type of helicopter or in a flight simulator approved for the purpose.

7.4.l.2 When a pilot-in-command or a co-pilot is flying several variants of the same type of helicopter or different types of helicopter with similar characteristics in terms of operating procedures, systems and handling, the State shall decide under which conditions the requirements of 7.4.1.1 for each variant or each type of helicopter can be combined.

7.4.2 Pilot-in-command operational qualification

7.4.2.1 The operator shall not utilize a pilot as pilot-in-command of a helicopter on an operation for which that pilot is not currently qualified until such pilot has complied with 7.4.2.2 and 7.4.2.3.

7.4.2.2 Each such pilot shall demonstrate to the operator an adequate knowledge of:

a) 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.

Note.— That portion of the demonstration relating to arrival, departure, holding and instrument approach procedures may be accomplished in an appropriate training device which is adequate for this purpose.

7.4.2.3 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.

7.4.2.4 The operator shall maintain a record, sufficient to satisfy the State of the Operator, of the qualification of the pilot and of the manner in which such qualification has been achieved.

7.4.2.5 The operator shall not continue to utilize a pilot as a pilot-in-command on an operation in an area specified by the operator and approved by the State of the Operator 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 7.4.2.2 and 7.4.2.3.

7.4.3 Pilot proficiency checks

7.4.3.1 The operator shall ensure that piloting technique and the ability to execute emergency procedures is checked in such a way as to demonstrate the pilot's competence on each type or variant of a type of helicopter. Where the operation may be conducted under IFR, the operator shall ensure that the pilot's competence to comply with such rules is demonstrated to either a check pilot of the operator or to a representative of the State of the Operator. Such checks shall be performed twice within any period of one year. Any two such checks which are similar and which occur within a period of four consecutive months shall not alone satisfy this requirement.

Note 1.— Flight simulation training devices approved by the State of the Operator may be used for those parts of the checks for which they are specifically approved.

Note 2.— See the Manual of Criteria for the Qualification of Flight Simulation Training Devices *(Doc 9625)*, Volume II *— Helicopters.*

7.4.3.2 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 State shall decide under which conditions the requirements of 7.4.3.1 for each variant or each type of helicopter can be combined.

7.5 FLIGHT CREW EQUIPMENT

A flight crew member assessed as fit to exercise the privileges of a licence, subject to the use of suitable correcting lenses, shall have a spare set of the correcting lenses readily available when exercising those privileges.

CHAPTER 8. FLIGHT OPERATIONS OFFICER/FLIGHT DISPATCHER

8.1 When the State of the Operator requires that a flight operations officer/flight dispatcher, employed in conjunction with an approved method of control and supervision of flight operations, be licensed, that flight operations officer/flight dispatcher shall be licensed in accordance with the provisions of Annex 1.

8.2 In accepting proof of qualifications other than the option of holding of a flight operations officer/flight dispatcher licence, the State of the Operator, 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 Annex 1 for the flight operations officer/flight dispatcher licence.

8.3 A flight operations officer/flight dispatcher shall not be assigned to duty unless that person has:

a) satisfactorily completed the operator-specific training course that addresses all the specific components of its approved method of control and supervision of flight operations specified in 2.2.1.3;

Note.— Guidance on the composition of such training syllabi is provided in the Training Manual *(Doc 7192), Part D-3 —* Flight Operations Officers/Flight Dispatchers.

b) made, within the preceding 12 months, at least a one-way qualification flight in a helicopter over any area for which that person is authorized to exercise flight supervision. The flight shall include landings at as many heliports as practicable;

Note.— For the purpose of the qualification flight, the flight operations officer/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.

c) demonstrated to the operator a knowledge of:

1) the contents of the operations manual described in Appendix 8;

2) the radio equipment in the helicopters used; and

3) the navigation equipment in the helicopters used;

d) 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 authorized to exercise flight supervision:

1) the seasonal meteorological conditions and the sources of meteorological information;

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

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

4) the helicopter loading instructions;

e) satisfied the operator as to knowledge and skills related to human performance as they apply to dispatch duties; and

f) demonstrated to the operator the ability to perform the duties specified in 2.6.

8.4 **Recommendation.—** *A flight operations officer/flight dispatcher assigned to duty should maintain complete familiarization with all features of the operations which are pertinent to such duties, including knowledge and skills related to human performance.*

Note.— Guidance material to design training programmes to develop knowledge and skills in human performance can be found in the Human Factors Training Manual *(Doc 9683)*.

8.5 **Recommendation.—** *A flight operations officer/flight dispatcher should not be assigned to duty after 12 consecutive months of absence from such duty, unless the provisions of 8.3 are met.*

CHAPTER 9. MANUALS, LOGS AND RECORDS

Note.— The following additional manuals, logs and records are associated with this Annex but are not included in this chapter:

Fuel and oil records — see 2.2.9

Continuing airworthiness records — see 6.4

Flight time, flight duty periods, duty periods and rest periods records — see 2.8.3.3

Flight preparation forms — see 2.3

Operational flight plan — see 2.3.3

Pilot-in-command operational qualification records — see 7.4.2.4.

9.1 FLIGHT MANUAL

Note.— The flight manual contains the information specified in Annex 8.

The flight manual shall be updated by implementing changes made mandatory by the State of Registry.

9.2 OPERATOR'S MAINTENANCE CONTROL MANUAL

The operator's maintenance control manual provided in accordance with 6.2, which may be issued in separate parts, shall contain the following information:

a) a description of the procedures required by 6.1.1 including, when applicable:

   1) a description of the administrative arrangements between the operator and the approved maintenance organization; and

   2) a description of the maintenance procedures and the procedures for completing and signing a maintenance release when maintenance is based on a system other than that of an approved maintenance organization;

b) names and duties of the person or persons required by 6.1.4;

c) a reference to the maintenance programme required by 6.3.1;

d) a description of the methods used for the completion and retention of the operator's maintenance records required by 6.4;

e) a description of the procedures for monitoring, assessing and reporting maintenance and operational experience required by 6.5.1;

f) a description of the procedures for complying with the service information reporting requirements of Annex 8, Part II, 4.2.3.1 f) and 4.2.4;

g) a description of procedures for assessing continuing airworthiness information and implementing any resulting actions, as required by 6.5.2;

h) a description of the procedures for implementing action resulting from mandatory continuing airworthiness information;

i) a description of establishing and maintaining a system of analysis and continued monitoring of the performance and efficiency of the maintenance programme, in order to correct any deficiency in that programme;

j) a description of helicopter types and models to which the manual applies;

k) a description of procedures for ensuring that unserviceabilities affecting airworthiness are recorded and rectified;

l) a description of the procedures for advising the State of Registry of significant in-service occurrences;

m) a description of procedures to control the leasing of aircraft and related aeronautical products; and

n) a description of the maintenance control manual amendment procedures.

9.3 MAINTENANCE PROGRAMME

9.3.1 A maintenance programme for each helicopter as required by 6.3 shall contain the following information:

a) maintenance tasks and the intervals at which these are to be performed, taking into account the anticipated utilization of the helicopter;

b) when applicable, a continuing structural integrity programme;

c) procedures for changing or deviating from a) and b) above; and

d) when applicable, condition monitoring and reliability programme descriptions for helicopter systems, components, power transmissions, rotors and engines.

9.3.2 Maintenance tasks and intervals that have been specified as mandatory in approval of the type design shall be identified as such.

9.3.3 **Recommendation.—** *The maintenance programme should be based on maintenance programme information made available by the State of Design or by the organization responsible for the type design, and any additional applicable experience*.

9.4 JOURNEY LOG BOOK

9.4.1 **Recommendation.—** *The helicopter journey log book should contain the following items and the corresponding Roman numerals:*

I — Helicopter nationality and registration.

II — Date.

III — Names of crew members.

IV — Duty assignments of crew members.

V — Place of departure.

VI — Place of arrival.

VII — Time of departure.

VIII — Time of arrival.

IX — Hours of flight.

X — Nature of flight (private, scheduled or non-scheduled).

XI — Incidents, observations, if any.

XII — Signature of person in charge.

9.4.2 **Recommendation.—** *Entries in the journey log book should be made currently and in ink or indelible pencil.*

9.4.3 **Recommendation.—** *Completed journey log books should be retained to provide a continuous record of the last six months' operations.*

9.5 RECORDS OF EMERGENCY AND SURVIVAL EQUIPMENT CARRIED

Operators shall at all times have available for immediate communication to rescue coordination centres, lists containing information on the emergency and survival equipment carried on board any of their helicopters engaged in international air navigation. 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 the emergency portable radio equipment.

9.6 FLIGHT RECORDER RECORDS

The operator shall ensure, to the extent possible, in the event the helicopter becomes involved in an accident or incident, the preservation of all related flight recorder records, and if necessary the associated flight recorders, and their retention in safe custody pending their disposition as determined in accordance with Annex 13.

CHAPTER 10. CABIN CREW

10.1 ASSIGNMENT OF EMERGENCY DUTIES

The operator shall establish, to the satisfaction of the State of the Operator, 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.

10.2 PROTECTION OF CABIN CREW DURING FLIGHT

Each cabin crew member shall be seated with seat belt or, when provided, safety harness fastened during take-off and landing and whenever the pilot-in-command so directs.

Note.— The foregoing does not preclude the pilot-in-command from directing the fastening of the seat belt only, at times other than during take-off and landing.

10.3 TRAINING

The operator shall establish and maintain a training programme, approved by the State of the Operator, to be completed by all persons before being assigned as a cabin crew member. Cabin crew members shall complete a recurrent training programme annually. These training programmes shall ensure that each person is:

a) competent to execute those safety duties and functions that the cabin attendant is assigned to perform in the event of an emergency or in a situation requiring emergency evacuation;

b) drilled and capable in the use of emergency and life-saving equipment required to be carried, such as life jackets, life rafts, evacuation slides, emergency exits, portable fire extinguishers, oxygen equipment, first-aid and universal precaution kits, and automated external defibrillators;

c) when serving on helicopters operated above 3 000 m (10 000 ft), knowledgeable as regards the effect of lack of oxygen and, in the case of pressurized helicopters, as regards physiological phenomena accompanying a loss of pressurization;

d) aware of other crew members' assignments and functions in the event of an emergency so far as is necessary for the fulfilment of the cabin crew member's own duties;

e) aware of the types of dangerous goods which may, and may not, be carried in a passenger cabin; and

f) knowledgeable about human performance as related to passenger cabin safety duties including flight crew-cabin crew coordination.

Note 1.— Requirements for the training of cabin crew members in the transport of dangerous goods are included in the Dangerous Goods Training Programme contained in Annex 18 — The Safe Transport of Dangerous Goods by Air *and the* Technical Instructions for the Safe Transport of Dangerous Goods by Air *(Doc 9284).*

Note 2.— For more information on dangerous goods operational requirements, see Chapter 12.

Note 3.— Guidance material to design training programmes to develop knowledge and skills in human performance can be found in the Cabin Crew Safety Training Manual *(Doc 10002).*

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CHAPTER 11. SECURITY*

11.1 HELICOPTER SEARCH PROCEDURE CHECKLIST

The operator shall ensure that there is on board a checklist of the procedures to be followed in searching for a bomb in case of suspected sabotage. The checklist shall be supported by guidance on the course of action to be taken should a bomb or suspicious object be found.

11.2 TRAINING PROGRAMMES

11.2.1 The operator shall establish and maintain a training programme which enables crew members to act in the most appropriate manner to minimize the consequences of acts of unlawful interference.

11.2.2 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.

11.3 REPORTING ACTS OF UNLAWFUL INTERFERENCE

Following an act of unlawful interference, the pilot-in-command shall submit, without delay, a report of such an act to the designated local authority.

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* In the context of this Chapter, the word ‘‘security’’ is used in the sense of prevention of illicit acts against civil aviation.

CHAPTER 12. DANGEROUS GOODS

12.1 GENERAL APPLICABILITY

Note 1.— 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.*

Note 2. — 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.*

12.2 STATE RESPONSIBILITIES

Note 1.— 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.

Note 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.

Note 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.

Note 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.

Note 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).

12.3 OPERATORS WITH NO SPECIFIC APPROVAL FOR THE TRANSPORT OF DANGEROUS GOODS AS CARGO

The State of the Operator shall ensure that operators with no specific approval to transport dangerous goods have:

a) established a dangerous goods training programme that meets the requirements of Annex 18, the applicable requirements of the Technical Instructions, Part 1;4 and the requirements of the State's regulations, as appropriate. Details of the dangerous goods training programme shall be included in the operators' operations manuals; and

b) established dangerous goods policies and procedures in their operations manuals to meet, at a minimum, the requirements of Annex 18, the Technical Instructions and the State's regulations to allow operator personnel to:

   1) identify and reject undeclared dangerous goods, including COMAT classified as dangerous goods; and

2) report to the appropriate authorities of the State of the Operator, and the State in which it occurred, any:

   i) occasions when undeclared dangerous goods are discovered in cargo or mail; and

   ii) dangerous goods accidents and incidents.

12.4 OPERATORS WITH A SPECIFIC APPROVAL FOR THE TRANSPORT OF DANGEROUS GOODS AS CARGO

12.4.1 Overview

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 the State regulations, 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 the State's regulations to enable operator personnel to:

   1) identify and reject undeclared or misdeclared dangerous goods in cargo or mail, including COMAT classified as dangerous goods;

   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 misdeclared 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 State of the Operator, 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 the *Supplement to the Technical Instructions for the Safe Transport of Dangerous Goods by Air* (Doc 9284SU), Part S-7;4.8).

12.4.2 Loading and securing of dangerous goods

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;2.4.1 of the Technical Instructions.

12.4.3 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).

12.4.3.1 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.

12.4.3.2 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.

12.4.3.3 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.

12.5 PROVISION OF INFORMATION

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.

12.6 DOMESTIC COMMERCIAL AIR TRANSPORT OPERATIONS

Recommendation.— *The International Standards and Recommended Practices set forth in this chapter should be applied by all Contracting States, including in the case of domestic commercial air transport operations.*

Note.— Annex 18 contains a similar provision in this regard.

ANNEX 6 — PART III

SECTION III

INTERNATIONAL GENERAL AVIATION

CHAPTER 1. GENERAL

Note 1.— Although the Convention on International Civil Aviation allocates to the State of Registry certain functions which that State is entitled to discharge, or obligated to discharge, as the case may be, the Assembly recognized, in Resolution A23-13 that the State of Registry may be unable to fulfil its responsibilities adequately in instances where aircraft are leased, chartered or interchanged — in particular without crew — by the operator of another State and that the Convention may not adequately specify the rights and obligations of the State of the Operator in such instances until such time as Article 83 bis *of the Convention enters into force. Accordingly, the Council urged that if, in the above-mentioned instances, the State of Registry finds itself unable to discharge adequately the functions allocated to it by the Convention, it delegate to the State of the Operator, subject to acceptance by the latter State, those functions of the State of Registry that can more adequately be discharged by the State of the Operator. It was understood that pending entry into force of Article 83* bis *of the Convention the foregoing action would only be a matter of practical convenience and would not affect either the provisions of the Chicago Convention prescribing the duties of the State of Registry or any third State. However, as Article 83* bis *of the Convention entered into force on 20 June 1997, such transfer agreements will have effect in respect of Contracting States which have ratified the related Protocol (Doc 9318) upon fulfilment of the conditions established in Article 83* bis*.*

Note 2.— In the case of international operations effected jointly with helicopters, not all of which are registered in the same Contracting State, nothing in this Part of the Annex prevents the States concerned from entering into an agreement for the joint exercise of the functions placed upon the State of Registry by the provisions of the relevant Annexes.

1.1 COMPLIANCE WITH LAWS, REGULATIONS AND PROCEDURES

1.1.1 The pilot-in-command shall comply with the relevant laws, regulations and procedures of the States in which the helicopter is operated.

Note 1.— Compliance with more restrictive measures, not in contravention of the provisions of 1.1.1, may be required by the State of Registry.

Note 2.— Rules covering flight over the high seas are contained in Annex 2.

Note 3.— Information for pilots on flight procedure parameters and operational procedures is contained in PANS-OPS (Doc 8168), Volume I. Criteria for the construction of visual and instrument flight procedures are contained in PANS-OPS (Doc 8168), Volume II. Obstacle Clearance criteria and procedures used in certain States may differ from PANS-OPS, and knowledge of these differences is important for safety reasons.

1.1.2 The pilot-in-command shall be responsible for the operation and safety of the helicopter and for the safety of all crew members, passengers 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.

1.1.3 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 State of Registry. Such reports shall be submitted as soon as possible and normally within ten days.

1.1.4 The pilot-in-command 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.

Note.— A definition of the term "serious injury" is contained in Annex 13.

1.1.5 **Recommendation.—** *The pilot-in-command should have available on board the helicopter essential information concerning the search and rescue services in the areas over which it is intended the helicopter will be flown.*

1.2 DANGEROUS GOODS

1.2.1 General applicability

Note 1.— Provisions for carriage of dangerous goods are contained in Annex 18.

Note 2.— Due to the differences in the type of operations carried out by helicopters, compared with aeroplanes, some additional considerations need to be made when dangerous goods are carried by helicopter, as described in Helicopter Operations in the Technical Instruction for the Safe Transport of Dangerous Goods by Air *(Doc 9284), Part 7;7.1.1.*

1.2.2 Applicability

1.2.2.1 The provisions of the *Technical Instructions for the Safe Transport of Dangerous Goods by Air* (Doc 9284) also apply to the acceptance for carriage, loading and carriage of dangerous goods in any general aviation helicopter.

1.2.2.2 *Exceptions*. The general exceptions contained in Part 1;1.1.5 of the Technical Instructions and the exceptions contained in Part 1;2.2 of the Technical Instructions also apply to any general aviation helicopter.

1.3 USE OF PSYCHOACTIVE SUBSTANCES

Note.— Provisions concerning the use of psychoactive substances are contained in Annex 1, 1.2.7 and Annex 2, 2.5.

1.4 SPECIFIC APPROVALS

The pilot-in-command shall not conduct operations for which a specific approval is required unless such approval has been issued by the State of Registry. Specific approvals shall follow the layout and contain at least the information listed in Appendix 5.

CHAPTER 2. FLIGHT OPERATIONS

2.1 ADEQUACY OF OPERATING FACILITIES

The pilot-in-command shall not commence a flight unless it has been ascertained by every reasonable means available that the ground and/or water facilities available and directly required for such flight and for the safe operation of the helicopter are adequate, including communication facilities and navigation aids.

Note.— "Reasonable means" in this Standard is intended to denote the use, at the point of departure, of information available to the pilot-in-command either through official information published by the aeronautical information services or readily obtainable from other sources.

2.2 HELIPORT OR LANDING LOCATION OPERATING MINIMA

2.2.1 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.

Note.— This Standard does not require the State of the Aerodrome to establish operating minima.

2.2.1.1 The State of Registry shall authorize operational credit(s) for operations with advanced aircraft. Where the operational credit relates to low visibility operations, the State of Registry shall issue a specific approval. Such authorizations shall not affect the classification of the instrument approach procedure.

Note 1.— Operational credit includes:

a) for the purposes of an approach ban (2.6.3.2) or dispatch considerations, a minimum below the heliport or landing location operating minima;

b) reducing or satisfying the visibility requirements; or

c) requiring fewer ground facilities as compensated for by airborne capabilities.

Note 2.— Guidance on operational credit and how to express the operational credit in the specific approvals template is contained in the Manual of All-Weather Operations *(Doc 9365).*

Note 3.— Information regarding a HUD or equivalent displays, including references to RTCA and EUROCAE documents, is contained in the Manual of All-Weather Operations *(Doc 9365).*

Note 4.— 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.

2.2.1.2 When issuing a specific approval for the operational credit, the State of Registry shall ensure that the:

a) aircraft meets the appropriate airworthiness certification requirements;

b) 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 (or other documents associated with the certificate of airworthiness) is more than one;

c) operator/owner has carried out a safety risk assessment of the operations supported by the equipment;

d) operator/owner has established and documented normal and abnormal procedures and MEL;

e) operator/owner has established a training programme for the flight crew members and relevant personnel involved in the flight preparation;

f) operator/owner has established a system for data collection, evaluation and trend monitoring for low visibility operations for which there is an operational credit; and

g) operator/owner has instituted appropriate procedures with respect to continuing airworthiness (maintenance and repair) practices and programmes.

Note 1.— Guidance on safety risk assessments is contained in the Safety Management Manual *(Doc 9859).*

Note 2.— Guidance on operational approvals is contained in the Manual of All-Weather Operations *(Doc 9365).*

2.2.1.3 For operations with operational credit with minima above those related to low visibility operations, the State of Registry shall establish criteria for the safe operation of the aircraft.

Note.— Guidance on operational credit for operations with minima above those related to low visibility operations is contained in the Manual of All-Weather Operations *(Doc 9365).*

2.3 BRIEFING

2.3.1 The pilot-in-command shall ensure that crew members and passengers are made familiar, by means of an oral briefing or by other means, with the location and the use of:

a) seat belts or harnesses; and, as appropriate,

b) emergency exits;

c) life jackets;

d) oxygen dispensing equipment; and

e) other emergency equipment provided for individual use, including passenger emergency briefing cards.

2.3.2 The pilot-in-command shall ensure that all persons on board are aware of the location and general manner of use of the principal emergency equipment carried for collective use.

2.4 HELICOPTER AIRWORTHINESS AND SAFETY PRECAUTIONS

A flight shall not be commenced until the pilot-in-command is satisfied that:

a) the helicopter is airworthy, duly registered and that appropriate certificates with respect thereto are aboard the helicopter;

b) the instruments and equipment installed in the helicopter are appropriate, taking into account the expected flight conditions;

c) any necessary maintenance has been performed in accordance with Chapter 6;

d) the mass of the helicopter and centre of gravity location are such that the flight can be conducted safely, taking into account the flight conditions expected;

e) any load carried is properly distributed and safely secured; and

f) the helicopter operating limitations contained in the flight manual, or its equivalent, will not be exceeded.

2.5 WEATHER REPORTS AND FORECASTS

Before commencing a flight, the pilot-in-command shall be familiar with all available meteorological information appropriate to the intended flight. Preparation for a flight away from the vicinity of the place of departure, and for every flight under IFR, shall include: 1) a study of available current weather reports and forecasts; and 2) the planning of an alternative course of action to provide for the eventuality that the flight cannot be completed as planned because of weather conditions.

Note 1.— The requirements for flight plans are contained in Annex 2 — Rules of the Air *and the procedures relating to flight plans and associated services are contained in the* Procedures for Air Navigation Services — Air Traffic Management *(PANS-ATM, Doc 4444).*

Note 2.— Detailed guidance on the use of the FF-ICE services, including the use of a preliminary flight plan, can be found in the Manual on Flight and Flow — Information for a Collaborative Environment (FF-ICE) *(Doc 9965).*

2.6 LIMITATIONS IMPOSED BY WEATHER CONDITIONS

2.6.1 Flight in accordance with VFR

A flight, except one of purely local character in visual meteorological conditions, to be conducted in accordance with VFR shall not be commenced 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 enable compliance with these rules.

2.6.2 Flight in accordance with IFR

2.6.2.1 *When an alternate is required.* A flight to be conducted in accordance with IFR shall not be commenced unless the available information indicates that conditions, at the heliport of intended landing and at least one alternate heliport, will, at the estimated time of arrival, be at or above the heliport operating minima.

Note.— It is the practice in some States to declare, for flight planning purposes, higher minima for a heliport when nominated as an alternate than for the same heliport when planned as that of intended landing.

2.6.2.2 *When no alternate is required.* A flight to be conducted in accordance with IFR to a heliport when no alternate heliport is required shall not be commenced unless available current meteorological information indicates that the following meteorological conditions will exist from two hours before to two hours after the estimated time of arrival, or from the actual time of departure to two hours after the estimated time of arrival, whichever is the shorter period:

a) a cloud base of at least 120 m (400 ft) above the minimum associated with the instrument approach procedure; and

b) visibility of at least 1.5 km more than the minimum associated with the procedure.

Note.— These should be considered as minimum values where a reliable and continuous meteorological watch is maintained. When only an "area" type forecast is available these values should be increased accordingly.

2.6.3 Heliport operating minima

2.6.3.1 A flight shall not be continued towards the heliport of intended landing unless the latest available meteorological information indicates that conditions at that heliport, or at least one alternate heliport, will, at the estimated time of arrival, be at or above the specified heliport operating minima.

2.6.3.2 An instrument 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.

Note.— Criteria for the final approach segment is contained in PANS-OPS (Doc 8168), Volume II.

2.6.3.3 If, after entering the final approach segment or after descending below 300 m (1 000 ft) above the heliport elevation, the reported visibility or controlling RVR falls below the specified minimum, the approach may be continued 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.

2.6.4 Flight in icing conditions

A flight to be operated in known or expected icing conditions shall not be commenced unless the helicopter is certificated and equipped to cope with such conditions.

2.7 ALTERNATE HELIPORTS

2.7.1 For a flight to be conducted in accordance with IFR, at least one alternate heliport or landing location shall be specified in the operational flight plan and the flight plan, unless:

a) the weather conditions in 2.6.2.2 prevail; or

b) 1) the heliport or landing location of intended landing is isolated and no alternate heliport or landing location is available; and

2) an instrument approach procedure is prescribed for the isolated heliport of intended landing; and

3) a point of no return (PNR) is determined in case of an offshore destination.

2.7.2 Suitable offshore alternates may be specified subject to the following:

a) the offshore alternates shall be used only after passing a PNR. Prior to a PNR, onshore alternates shall be used;

b) mechanical reliability of critical control systems and critical components shall be considered and taken into account when determining the suitability of the alternate;

c) one engine inoperative performance capability shall be attainable prior to arrival at the alternate;

d) to the extent possible, deck availability shall be guaranteed; and

e) weather information must be reliable and accurate.

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

2.7.3 **Recommendation.**—*Offshore alternates should not be used when it is possible to carry enough fuel to have an onshore alternate. Offshore alternates should not be used in a hostile environment.*

2.8 FUEL AND OIL REQUIREMENTS

2.8.1 *All helicopters.* 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.

2.8.2 *VFR operations.* The fuel and oil carried in order to comply with 2.8.1 shall, in the case of VFR operations, be at least the amount to allow the helicopter to:

a) fly to the landing site to which the flight is planned;

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

c) have an additional amount of fuel to provide for the increased consumption on the occurrence of potential contingencies, as determined by the State and specified in the State regulations governing general aviation.

2.8.3 *IFR operations.* The fuel and oil carried in order to comply with 2.8.1 shall, in the case of IFR operations, be at least the amount to allow the helicopter:

2.8.3.1 When no alternate is required, in terms of 2.6.2.2, to fly to and execute an approach at the heliport or landing location to which the flight is planned, and thereafter to have:

a) a 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

b) an additional amount of fuel to provide for the increased consumption on the occurrence of potential contingencies.

2.8.3.2 When an alternate is required, in terms of 2.6.2.1, 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:

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

b) have a 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

c) have an additional amount of fuel to provide for the increased consumption on the occurrence of potential contingencies.

2.8.3.3 When no alternate heliport or landing location is available (i.e. the heliport of intended landing is isolated and no alternate is available), to fly to the heliport to which the flight is planned and thereafter for a period as specified by the State of the Operator.

2.8.4 In computing the fuel and oil required in 2.8.1, at least the following shall be considered:

a) meteorological conditions forecast;

b) expected air traffic control routings and traffic delays;

c) for IFR flight, one instrument approach at the destination heliport, including a missed approach;

d) the procedures for loss of pressurization, where applicable, or failure of one engine while en-route; and

e) any other conditions that may delay the landing of the helicopter or increase fuel and/or oil consumption.

Note.— Nothing in 2.8 precludes amendment of a flight plan in flight in order to replan the flight to another heliport, provided that the requirements of 2.8 can be complied with from the point where the flight has been replanned.

2.8.5 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.

2.9 IN-FLIGHT FUEL MANAGEMENT

2.9.1 The pilot-in-command 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.

Note.— The protection of final reserve fuel is intended to ensure safe landing at any heliport or landing location when unforeseen occurrences may not permit a safe completion of an operation as originally planned.

2.9.2 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.

2.9.3 The pilot-in-command 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 in compliance with 2.8.

Note 1.— The planned final reserve fuel refers to the value calculated in 2.8 and 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.

Note 3.— The words "MAYDAY FUEL" describe the nature of the distress conditions as required in Annex 10, Volume II, 5.3.2.1.1, b) 3).

2.10 OXYGEN SUPPLY

Note.— Approximate altitudes in the Standard Atmosphere corresponding to the values of absolute pressure used in the text are as follows:

Absolute pressure	Metres	Feet
700 hPa	*3 000*	*10 000*
620 hPa	*4 000*	*13 000*

2.10.1 A flight to be operated at altitudes at which the atmospheric pressure in personnel compartments will be less than 700 hPa shall not be commenced unless sufficient stored breathing oxygen is carried to supply:

a) all crew members and 10 per cent of the passengers for any period in excess of 30 minutes that the pressure in compartments occupied by them will be between 700 hPa and 620 hPa;
b) the crew and passengers for any period that the atmospheric pressure in compartments occupied by them will be less than 620 hPa.

2.10.2 A flight to be operated with a pressurized helicopter shall not be commenced unless a sufficient quantity of stored breathing oxygen is carried to supply all the crew members and a proportion of the passengers, as is appropriate to the circumstances of the flight being undertaken, in the event of loss of pressurization, for any period that the atmospheric pressure in any compartment occupied by them would be less than 700 hPa.

2.11 USE OF OXYGEN

All flight crew members, when engaged in performing duties essential to the safe operation of a helicopter in flight, shall use breathing oxygen continuously whenever the circumstances prevail for which its supply has been required in 2.10.1 or 2.10.2.

2.12 IN-FLIGHT EMERGENCY INSTRUCTION

In an emergency during flight, the pilot-in-command shall ensure that all persons on board are instructed in such emergency action as may be appropriate to the circumstances.

2.13 WEATHER REPORTING BY PILOTS

Recommendation.— *When weather conditions likely to affect the safety of other aircraft are encountered, they should be reported as soon as possible.*

2.14 HAZARDOUS FLIGHT CONDITIONS

Recommendation.— *Hazardous flight conditions, other than those associated with meteorological conditions, encountered en-route should be reported as soon as possible. The reports so rendered should give such details as may be pertinent to the safety of other aircraft.*

2.15 FITNESS OF FLIGHT CREW MEMBERS

The pilot-in-command shall be responsible for ensuring that a flight:

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

b) 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 or lack of oxygen.

2.16 FLIGHT CREW MEMBERS AT DUTY STATIONS

2.16.1 Take-off and landing

All flight crew members required to be on flight deck duty shall be at their stations.

2.16.2 En-route

All flight crew members required to be on flight deck duty shall remain at their stations except when their absence is necessary for the performance of duties in connection with the operation of the helicopter, or for physiological needs.

2.16.3 Seat belts

All flight crew members shall keep their seat belt fastened when at their stations.

2.16.4 Safety harness

Recommendation.— *When safety harnesses are provided, any flight crew member occupying a pilot's seat should keep the safety harness fastened during the take-off and landing phases; all other flight crew members should keep their safety harness fastened during the take-off and landing phases unless the shoulder straps interfere with the performance of their duties, in which case the shoulder straps may be unfastened but the seat belt must remain fastened.*

Note.— Safety harness includes shoulder strap(s) and a seat belt which may be used independently.

2.17 INSTRUMENT FLIGHT PROCEDURES

2.17.1 One or more instrument approach procedures designed to support instrument approach operations shall be approved and promulgated by the State in which the heliport is located, or by the State which is responsible for the heliport when located outside the territory of any State, to serve each final approach and take-off area or heliport utilized for instrument flight operations.

2.17.2 All helicopters operated in accordance with IFR shall comply with the instrument approach procedures approved by the State in which the heliport is located, or by the State which is responsible for the heliport when located outside the territory of any State.

Note 1.— See Section II, Chapter 2, 2.2.8.3, for instrument approach operation classifications.

Note 2.— Information for pilots on flight procedure parameters and operational procedures is contained in PANS-OPS (Doc 8168), Volume I. Criteria for the construction of instrument flight procedures for the guidance of procedure specialists are provided in PANS-OPS (Doc 8168), Volume II. Obstacle clearance criteria and procedures used in certain States may differ from PANS-OPS and knowledge of these differences is important for safety reasons (see Section II, Chapter 1, 1.1.1).

2.18 INSTRUCTION — GENERAL

A helicopter rotor shall not be turned under power for the purpose of flight without a qualified pilot at the controls.

2.19 REFUELLING WITH PASSENGERS ON BOARD OR ROTORS TURNING

2.19.1 **Recommendation.—** *A helicopter should not be refuelled when passengers are embarking, on board or disembarking or when the rotor is turning unless it is attended by the pilot-in-command or other qualified personnel ready to initiate and direct an evacuation of the helicopter by the most practical and expeditious means available.*

2.19.2 **Recommendation.—** *When refuelling with passengers embarking, on board or disembarking, two-way communications should be maintained by helicopter inter-communications system or other suitable means between the ground crew supervising the refuelling and the pilot-in-command or other qualified personnel required by 2.19.1.*

Note 1.— Provisions concerning aircraft refuelling are contained in Annex 14, Volume I, and guidance on safe refuelling practices is contained in the Airport Services Manual *(Doc 9137), Parts 1 and 8.*

Note 2.— 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.

2.20 OVER-WATER FLIGHTS

All helicopters on flights over water in a hostile environment in accordance with 4.3.1 shall be certificated for ditching. Sea state shall be an integral part of ditching information.

CHAPTER 3. HELICOPTER PERFORMANCE OPERATING LIMITATIONS

3.1 A helicopter shall be operated:

a) in compliance with the terms of its airworthiness certificate or equivalent approved document;

b) within the operating limitations prescribed by the certificating authority of the State of Registry; and

c) within the mass limitations imposed by compliance with the applicable noise certification Standards in Annex 16, Volume I, unless otherwise authorized, in exceptional circumstances for a certain heliport where there is no noise disturbance problem, by the competent authority of the State in which the heliport is situated.

3.2 Placards, listings, instrument markings, or combinations thereof, containing those operating limitations prescribed by the certificating authority of the State of Registry for visual presentation, shall be displayed in the helicopter.

Note.— The Standards of Annex 8, Part IV apply to all helicopters intended for the carriage of passengers or cargo or mail in international air navigation.

3.3 Where helicopters are operating to or from heliports in a congested hostile environment, the competent authority of the State in which the heliport is situated shall take such precautions as are necessary to control the risk associated with an engine failure.

Note.— Guidance is provided in the Helicopter Code of Performance Development Manual (Doc 10110).

CHAPTER 4. HELICOPTER INSTRUMENTS, EQUIPMENT AND FLIGHT DOCUMENTS

Note.— Specifications for the provision of helicopter communication and navigation equipment are contained in Chapter 5.

4.1 ALL HELICOPTERS ON ALL FLIGHTS

4.1.1 General

In addition to the minimum equipment necessary for the issuance of a certificate of airworthiness, the instruments, equipment and flight documents prescribed in the following paragraphs 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 State of Registry.

4.1.2 Instruments

A helicopter shall be equipped with instruments which will enable the flight crew to control the flight path of the helicopter, carry out any required procedural manoeuvre, and observe the operating limitations of the helicopter in the expected operating conditions.

4.1.3 Equipment

4.1.3.1 A helicopter shall be equipped with or carry on board:

a) an accessible first-aid kit;

b) 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;

Note.— Refer to 4.1.3.2 for fire extinguishing agents.

c) 1) a seat or berth for each person over an age to be determined by the State of Registry; and

2) a seat belt for each seat and restraining belts for each berth;

d) the following manuals, charts and information:

1) the flight manual or other documents or information concerning any operating limitations prescribed for the helicopter by the certificating authority of the State of Registry, required for the application of Chapter 3;

2) any specific approval issued by the State of Registry, if applicable, for the operation(s) to be conducted;

3) current and suitable charts for the route of the proposed flight and all routes along which it is reasonable to expect that the flight may be diverted;

4) procedures, as prescribed in Annex 2, for pilots-in-command of intercepted aircraft;

5) a list of visual signals for use by intercepting and intercepted aircraft, as contained in Annex 2;

6) the journey log book for the helicopter; and

e) if fuses are used, spare electrical fuses of appropriate ratings for replacement of those accessible in flight.

4.1.3.2 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 2018, 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.

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.

4.1.3.3 **Recommendation.—** *All helicopters on all flights should be equipped with the ground-air signal codes for search and rescue purposes.*

4.1.3.4 **Recommendation.—** *All helicopters on all flights should be equipped with a safety harness for each flight crew member seat.*

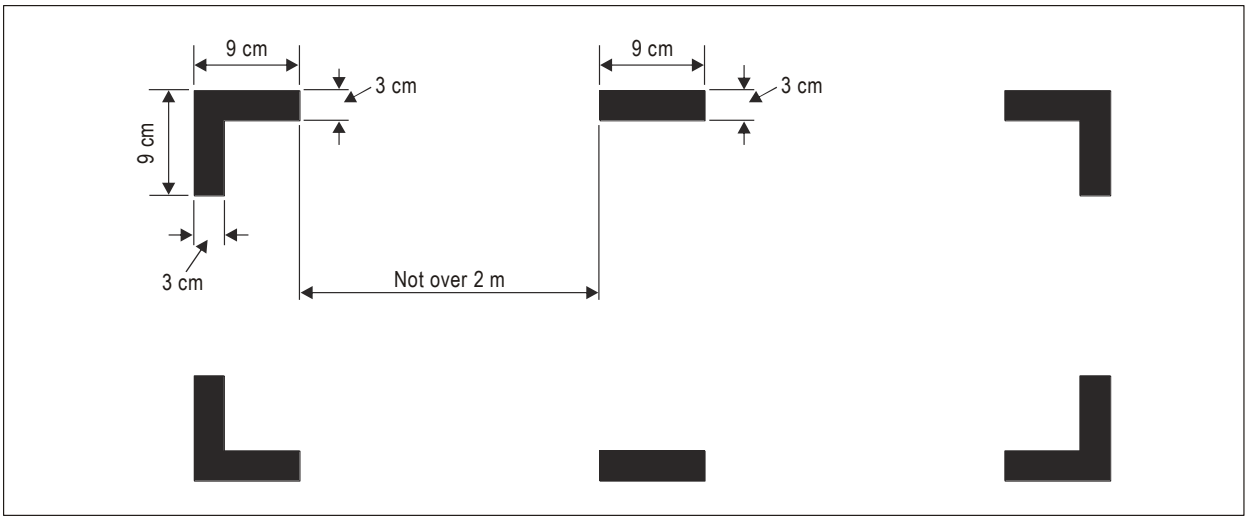
Note.— Safety harness includes shoulder strap(s) and a seat belt which may be used independently.

4.1.4 Marking of break-in points

4.1.4.1 If areas of the fuselage suitable for break-in by rescue crews in an emergency are marked on a helicopter, such areas shall be marked as shown below (see figure following). The colour of the markings shall be red or yellow and, if necessary, they shall be outlined in white to contrast with the background.

4.1.4.2 If the corner markings are more than 2 m apart, intermediate lines 9 cm × 3 cm shall be inserted so that there is no more than 2 m between adjacent markings.

Note.— This Standard does not require any helicopter to have break-in areas.



MARKING OF BREAK-IN POINTS (see 4.1.4)

4.2 INSTRUMENTS AND EQUIPMENT FOR FLIGHTS OPERATED UNDER VFR AND IFR — BY DAY AND NIGHT

Note.— The flight instrument requirements in 4.2.1, 4.2.2 and 4.2.3 may be met by combinations of instruments or by electronic displays.

4.2.1 All helicopters when operating in accordance with VFR by day shall be:

a) equipped with:

1) a magnetic compass;

2) a sensitive pressure altimeter;

3) an airspeed indicator; and

4) such additional instruments or equipment as may be prescribed by the appropriate authority; and

b) equipped with, or shall carry, a means of measuring and displaying the time in hours, minutes and seconds.

4.2.2 All helicopters when operating in accordance with VFR at night shall be equipped with:

a) the equipment specified in 4.2.1;

b) an attitude indicator (artificial horizon) for each required pilot;

c) a slip indicator;

d) a heading indicator (directional gyroscope);

e) a rate of climb and descent indicator; and

f) such additional instruments or equipment as may be prescribed by the appropriate authority;

and the following lights:

g) the lights required by Annex 2 for aircraft in flight or operating on the movement area of a heliport;

Note.— The general characteristics of the lights are specified in Annex 8.

h) a landing light;

i) illumination for all flight instruments and equipment that are essential for the safe operation of the helicopter;

j) lights in all passenger compartments; and

k) a flashlight for each crew member station.

4.2.2.1 **Recommendation**.— *The landing light should be trainable, at least in the vertical plane.*

4.2.3 All helicopters, when operating in accordance with IFR, or when the helicopter cannot be maintained in a desired attitude without reference to one or more flight instruments, shall be:

a) equipped with:

1) a magnetic compass;

2) a sensitive pressure altimeter;

Note.— Due to the long history of misreadings, the use of drum-pointer altimeters is not recommended.

3) an airspeed indicating system with a means of preventing malfunctioning due to either condensation or icing;

4) a slip indicator;

5) an attitude indicator (artificial horizon) for each required pilot and one additional attitude indicator;

6) a heading indicator (directional gyroscope);

7) a means of indicating whether the supply of power to the gyroscopic instruments is adequate;

8) a means of indicating on the flight deck the outside air temperature;

9) a rate of climb and descent indicator;

10) such additional instruments or equipment as may be prescribed by the appropriate authority;

l1) if operated by night, the lights specified in 4.2.2 g) to k) and 4.2.2.1; and

b) equipped with, or shall carry, a means of measuring and displaying the time in hours, minutes and seconds.

4.3 ALL HELICOPTERS ON FLIGHTS OVER WATER

4.3.1 Means of flotation

All helicopters intended to be flown over water shall be fitted with a permanent or rapidly deployable means of flotation so as to ensure a safe ditching of the helicopter when:

a) engaged in offshore operations or other over-water operations, as prescribed by the State of Registry; or

b) flying at a distance from land specified by the appropriate State authority.

Note.— When determining the distance from land referred to in 4.3.1, consideration should be given to environmental conditions and the availability of search and rescue facilities.

4.3.2 Emergency equipment

4.3.2.1 Helicopters operating in accordance with the provisions of 4.3.1 shall be equipped with:

a) one life jacket, or equivalent individual flotation device, for each person on board, stowed in a position easily accessible from the seat of the person for whose use it is provided;

b) when not precluded by consideration related to the type of helicopter used, life-saving rafts in sufficient numbers to carry all persons on board, stowed so as to facilitate their ready use in emergency, provided with such life-saving equipment including means of sustaining life as is appropriate to the flight to be undertaken; and

c) equipment for making the pyrotechnical distress signals described in Annex 2.

4.3.2.2 When taking off or landing at a heliport where, in the opinion of the State of the Operator, 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 4.3.2.1 a) shall be carried.

4.3.2.3 Each life jacket and equivalent individual flotation device, when carried in accordance with this 4.3, shall be equipped with a means of electric illumination for the purpose of facilitating the location of persons.

4.3.2.4 **Recommendation.—** *On any helicopter for which the individual certificate of airworthiness is first issued on or after 1 January 1991, at least 50 per cent of the life rafts carried in accordance with the provisions of 4.3.2 should be deployable by remote control.*

4.3.2.5 **Recommendation.—** *Rafts which are not deployable by remote control and which have a mass of more than 40 kg should be equipped with some means of mechanically assisted deployment.*

4.3.2.6 **Recommendation.—** *On any helicopter for which the individual certificate of airworthiness was first issued before 1 January 1991, the provisions of 4.3.2.4 and 4.3.2.5 should be complied with no later than 31 December 1992.*

4.4 ALL HELICOPTERS ON FLIGHTS OVER DESIGNATED LAND AREAS

Helicopters, when operated across land areas which have been designated by the State concerned as areas in which search and rescue would be especially difficult, shall be equipped with such signalling devices and life-saving equipment (including means of sustaining life) as may be appropriate to the area overflown.

4.5 ALL HELICOPTERS ON HIGH ALTITUDE FLIGHTS

4.5.1 Unpressurized helicopters

Unpressurized helicopters intended to be operated at high altitudes shall carry equipment for storing and dispensing the oxygen supplies required in 2.9.1.

4.5.2 Pressurized helicopters

Recommendation.— *Pressurized helicopters intended to be operated at high altitudes should carry emergency oxygen storage and dispensing equipment capable of storing and dispensing the oxygen supplies required in 2.9.2.*

4.6 ALL HELICOPTERS REQUIRED TO COMPLY WITH THE NOISE CERTIFICATION STANDARDS IN ANNEX 16, VOLUME I

All helicopters required to comply with the noise certification Standards of Annex 16, Volume I, shall carry a document attesting noise certification. When the document, or a suitable statement attesting noise certification as contained in another document approved by the State of Registry, is issued in a language other than English, it shall include an English translation.

Note 1.— The attestation may be contained in any document, carried on board, approved by the State of Registry in accordance with the relevant provisions of Annex 16, Volume I.

Note 2.— The various noise certification Standards of Annex 16, Volume I, which are applicable to helicopters, are determined according to the date of application for a type certificate, or the date of acceptance of an application under an equivalent prescribed procedure by the certificating authority. Some helicopters are not required to comply with any noise certification Standard. For details see Annex 16, Volume I, Part II, Chapters 8 and 11.

4.7 FLIGHT RECORDERS

Note 1.— Crash-protected flight recorders comprise one or more of the following:

- *a flight data recorder (FDR),*
- *a cockpit voice recorder (CVR),*
- *an airborne image recorder (AIR),*
- *a data link recorder (DLR).*

As per Appendix 4, image and data link information may be recorded on either the CVR or the FDR.

Note 2.— Combination recorders (FDR/CVR) may be used to meet the flight recorder equipage requirements in this Annex.

Note 3.— Detailed requirements on flight recorders are contained in Appendix 4.

Note 4.— Lightweight flight recorders comprise one or more of the following:

- *an aircraft data recording system (ADRS),*
- *a cockpit audio recording system (CARS),*
- *an airborne image recording system (AIRS),*
- *a data link recording system (DLRS).*

As per Appendix 4, image and data link information may be recorded on either the CARS or the ADRS.

Note 5.— For helicopters for which the application for type certification is submitted to a Contracting State before 1 January 2016, specifications applicable to crash-protected flight recorders may be found in EUROCAE ED-112, ED-56A, ED-55, Minimum Operational Performance Specifications (MOPS) or earlier equivalent documents.

Note 6.— For helicopters for which the application for type certification is submitted to a Contracting State on or after 1 January 2016, specifications applicable to crash-protected flight recorders may be found in EUROCAE ED-112A, Minimum Operational Performance Specification (MOPS), or equivalent documents.

Note 7.— Specifications applicable to lightweight flight recorders may be found in EUROCAE ED -155, Minimum Operational Performance Specification (MOPS), or equivalent documents.

Note 8.— Section II, Chapter 1 contains requirements for States regarding the use of voice, image and/or data recordings and transcripts.

4.7.1 Flight data recorders and aircraft data recording systems

Note.— Parameters to be recorded are listed in Table A4-1 of Appendix 4.

4.7.1.1 *Applicability*

4.7.1.1.1 All helicopters of a maximum certificated take-off mass of over 3 175 kg for which the individual certificate of airworthiness is first issued on or after 1 January 2016 shall be equipped with an FDR which shall record at least the first 48 parameters listed in Table A4-1 of Appendix 4.

4.7.1.1.2 All helicopters of a maximum certificated take-off mass of over 7 000 kg, or having a passenger seating configuration of more than nineteen, for which the individual certificate of airworthiness is first issued on or after 1 January 1989, shall be equipped with an FDR which shall record at least the first 30 parameters listed in Table A4-1 of Appendix 4.

4.7.1.1.3 **Recommendation.—** *All helicopters of a maximum certificated take-off mass of over 3 175 kg, up to and including 7 000 kg, for which the individual certificate of airworthiness is first issued on or after 1 January 1989, should be equipped with an FDR which should record at least the first 15 parameters listed in Table A4-1 of Appendix 4.*

4.7.1.2 *Recording technology*

FDRs shall not use engraving metal foil, frequency modulation (FM), photographic film or magnetic tape.

4.7.1.3 *Duration*

All FDRs shall retain the information recorded during at least the last 10 hours of their operation.

4.7.2 Cockpit voice recorders and cockpit audio recording systems

4.7.2.1 *Applicability*

4.7.2.1.1 All helicopters of a maximum certificated take-off mass of over 7 000 kg shall be equipped with a CVR. For helicopters not equipped with an FDR, at least main rotor speed shall be recorded on the CVR.

4.7.2.1.2 **Recommendation.—** *All helicopters of a maximum certificated take-off mass of over 3 175 kg for which the individual certificate of airworthiness is first issued on or after 1 January 1987 should be equipped with a CVR. For helicopters not equipped with an FDR, at least main rotor speed should be recorded on the CVR.*

4.7.2.2 *Recording technology*

CVRs shall not use magnetic tape or wire.

4.7.2.3 *Duration*

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 two hours of its operation.

4.7.3 Data link recorders

4.7.3.1 *Applicability*

4.7.3.1.1 All helicopters for which the individual certificate of airworthiness is first issued on or after 1 January 2016, which use any of the data link communications applications referred to in 5.1.2 of Appendix 4 and are required to carry a CVR, shall record the data link communications messages on a crash-protected flight recorder.

4.7.3.1.2 All helicopters for which the individual certificate of airworthiness was first issued before 1 January 2016, that are required to carry a CVR and are modified on or after 1 January 2016 to use any of the data link communications applications referred to in 5.1.2 of Appendix 4, shall record the data link communications messages on a crash-protected flight recorder unless the data link communications equipment is compliant with a type design or aircraft modification first approved prior to 1 January 2016.

Note 1.— Refer to Table F-4 in Attachment F for examples of data link communication recording requirements.

Note 2.— A Class B AIR could be a means for recording data link communications applications messages to and from the helicopters where it is not practical or is prohibitively expensive to record those data link communications applications messages on FDR or CVR.

Note 3.— The "aircraft modifications" refer to modifications to install the data link communications equipment on the aircraft (e.g. structural, wiring).

4.7.3.1.3 **Recommendation**.— *All helicopters for which the individual certificate of airworthiness was first issued before 1 January 2016, that are required to carry a CVR and are modified on or after 1 January 2016 to use any of the data link communications applications referred to in 5.1.2 of Appendix 4, should record the data link communications messages on a crash-protected flight recorder.*

4.7.3.2 *Duration*

The minimum recording duration shall be equal to the duration of the CVR.

4.7.3.3 *Correlation*

Data link recording shall be able to be correlated to the recorded cockpit audio.

4.7.4 Flight recorders — general

4.7.4.1 *Construction and installation*

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.

4.7.4.2 *Operation*

4.7.4.2.1 Flight recorders shall not be switched off during flight time.

4.7.4.2.2 To preserve flight recorder records, flight recorders shall be deactivated upon completion of flight time following an accident or incident. The flight recorders shall not be reactivated before their disposition as determined in accordance with Annex 13.

Note 1.— The need for removal of the flight recorder records from the aircraft will be determined by the investigation authority in the State conducting the investigation with due regard to the seriousness of an occurrence and the circumstances, including the impact on the operation.

Note 2.— The operator/owner's responsibilities regarding the retention of flight recorder records are contained in Section II, Chapter 9, 9.6.

4.7.4.3 *Continued serviceability*

Operational checks and evaluations of recordings from the flight recorder systems shall be conducted to ensure the continued serviceability of the recorders.

Note.— Procedures for the inspections of the flight recorder systems are given in Appendix 4.

4.7.4.4 *Flight recorders electronic documentation*

Recommendation.— *The documentation requirement concerning FDR parameters provided by operator/owner to accident investigation authorities should be in electronic format and take account of industry specifications.*

Note.— Industry specification for documentation concerning flight recorder parameters may be found in the ARINC 647A, Flight Recorder Electronic Documentation*, or equivalent document.*

4.8 EMERGENCY LOCATOR TRANSMITTER (ELT)

4.8.1 From 1 July 2008, all helicopters operating in performance Class 1 and 2 shall be equipped with at least one automatic ELT and, when operating on flights over water as described in 4.3.1 a), with at least one automatic ELT and one ELT(S) in a raft or life jacket.

4.8.2 From 1 July 2008, all helicopters operating in performance Class 3 shall be equipped with at least one automatic ELT and, when operating on flights over water as described in 4.3.1 b), with at least one automatic ELT and one ELT(S) in a raft or life jacket.

4.8.3 ELT equipment carried to satisfy the requirements of 4.8.1 and 4.8.2 shall operate in accordance with the relevant provisions of Annex 10, Volume III.

Note.— The judicious choice of numbers of ELTs, their type and placement on aircraft and associated floatable life support systems will ensure the greatest chance of ELT activation in the event of an accident for aircraft operating over water or land, including areas especially difficult for search and rescue. Placement of transmitter units is a vital factor in ensuring optimal crash and fire protection. The placement of the control and switching devices (activation monitors) of automatic fixed ELTs and their associated operational procedures will also take into consideration the need for rapid detection of inadvertent activation and convenient manual switching by crew members.

4.9 HELICOPTERS REQUIRED TO BE EQUIPPED WITH A PRESSURE-ALTITUDE REPORTING TRANSPONDER

4.9.1 From 1 January 2003, unless exempted by the appropriate authorities, all helicopters shall be equipped with a pressure-altitude reporting transponder which operates in accordance with the relevant provisions of Annex 10, Volume IV.

4.9.2 **Recommendation.—** *All helicopters should be equipped with a pressure-altitude reporting transponder which operates in accordance with the relevant provisions of Annex 10, Volume IV.*

Note.— The provisions in 4.9.1 and 4.9.2 are intended to support the effectiveness of ACAS as well as to improve the effectiveness of air traffic services. Effective dates for carriage requirements of ACAS are contained in Annex 6, Part I, 6.19.1 and 6.19.2. The intent is also for aircraft not equipped with pressure-altitude reporting transponders to be operated so as not to share airspace used by aircraft equipped with airborne collision avoidance systems. To this end, exemptions from the carriage requirement for pressure-altitude reporting transponders could be given by designating airspace where such carriage is not required.

4.10 MICROPHONES

Recommendation.— *All flight crew members required to be on flight deck duty should communicate through boom or throat microphones.*

4.11 HELICOPTERS EQUIPPED WITH AUTOMATIC LANDING SYSTEMS, A HEAD-UP DISPLAY (HUD) OR EQUIVALENT DISPLAYS, ENHANCED VISION SYSTEMS (EVS), SYNTHETIC VISION SYSTEMS (SVS) AND/OR COMBINED VISION SYSTEMS (CVS)

Notwithstanding Chapter 2, 2.2.1.1 to 2.2.1.3, where helicopters are equipped with automatic landing systems, a 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 State of Registry.

Note 1.— Information regarding automatic landing systems, HUD or equivalent displays, EVS, SVS or CVS, is contained in the Manual of All-Weather Operations *(Doc 9365).*

Note 2.— Automatic landing system — helicopter is an automatic approach using airborne systems that 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

4.12 ELECTRONIC FLIGHT BAGS (EFBs)

Note.— Guidance on EFB equipment, functions and specific approval is contained in the Manual on Electronic Flight Bags (EFBs) *(Doc 10020).*

4.12.1 EFB equipment

Where portable EFBs are used on board a helicopter, the pilot-in-command and the owner shall ensure that they do not affect the performance of the helicopter systems, equipment or the ability to operate the helicopter.

4.12.2 EFB functions

4.12.2.1 Where EFBs are used on board a helicopter, the pilot-in-command and/or the owner shall:

a) assess the safety risk(s) associated with each EFB function;

b) establish the procedures for the use of, and training requirements for, the device and each EFB function; and

c) 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.

Note.— Guidance on safety risk assessments is contained in the Safety Management Manual *(Doc 9859).*

4.12.2.2 The State of the Registry shall issue a specific approval for the operational use of EFB functions to be used for the safe operation of helicopters.

4.12.3 EFB specific approval

When issuing a specific approval for the operational use of EFBs, the State of Registry shall ensure that:

a) the EFB equipment and its associated installation hardware, including interaction with helicopter systems if applicable, meet the appropriate airworthiness certification requirements;

b) the owner has assessed the risks associated with the operations supported by the EFB function(s);

c) the owner has established requirements for redundancy of the information (if appropriate) contained and displayed by the EFB function(s);

d) the owner has established and documented procedures for the management of the EFB function(s) including any databases it may use; and

e) the owner has established and documented the procedures for the use of, and training requirements for, the EFB function(s).

Note.— Guidance on safety risk assessments is contained in the Safety Management Manual *(Doc 9859).*

4.13 HELICOPTER OPERATED UNDER AN ARTICLE 83 *BIS* AGREEMENT

Note.— Guidance concerning the transfer of responsibilities by the State of Registry to the State of the principal location of a general aviation operator in accordance with Article 83 bis *is contained in Doc 10059.*

4.13.1 A helicopter, when operating under an Article 83 *bis* agreement, entered into between the State of Registry and the State of the principal location of a general aviation 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.

Note.— Guidance regarding the agreement summary is contained in Doc 10059.

4.13.2 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 by the State of Registry to the State of the principal location of a general aviation operator under the agreement, when conducting surveillance activities such as ramp checks.

Note.— Guidance for the civil aviation safety inspector conducting an inspection of an aeroplane operated under an Article 83 bis *agreement is contained in the* Manual of Procedures for Operations Inspection, Certification and Continued Surveillance *(Doc 8335).*

4.13.3 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 principal location of a general aviation 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 as per 4.13.1 will need to list only the specific aircraft carrying the copy.*

4.13.4 **Recommendation**.— *The agreement summary should contain the information in Appendix 7 for the specific aircraft and should follow the layout of Appendix 7 paragraph 3.*

CHAPTER 5. HELICOPTER COMMUNICATION, NAVIGATION AND SURVEILLANCE EQUIPMENT

5.1 COMMUNICATION EQUIPMENT

5.1.1 A helicopter to be operated in accordance with IFR or at night shall be provided with radio communication equipment. Such equipment shall be capable of conducting two-way communication with those aeronautical stations and on those frequencies prescribed by the appropriate authority.

Note.— The requirements of 5.1.1 are considered fulfilled if the ability to conduct the communications specified therein is established during radio propagation conditions which are normal for the route.

5.1.2 When compliance with 5.1.1 requires that more than one communication equipment unit be provided, each shall be independent of the other or others to the extent that a failure in any one will not result in failure of any other.

5.1.3 A helicopter to be operated in accordance with VFR, but as a controlled flight, shall, unless exempted by the appropriate authority, be provided with radio communication equipment capable of conducting two-way communication at any time during flight with such aeronautical stations and on such frequencies as may be prescribed by the appropriate authority.

5.1.4 A helicopter to be operated on a flight to which the provisions of 4.3 or 4.4 apply shall, unless exempted by the appropriate authority, be provided with radio communication equipment capable of conducting two-way communication at any time during flight with such aeronautical stations and on such frequencies as may be prescribed by the appropriate authority.

5.1.5 **Recommendation.—** *The radio communication equipment required in accordance with 5.1.1 to 5.1.4 should provide for communication on the aeronautical emergency frequency 121.5 MHz.*

5.1.6 For operations where communication equipment is required to meet an RCP specification for performance-based communication (PBC), a helicopter shall, in addition to the requirements specified in 5.1.1 to 5.1.5:

a) be provided with communication equipment which will enable it to operate in accordance with the prescribed RCP specification(s);

b) have information relevant to the helicopter RCP specification capabilities listed in the flight manual or other helicopter documentation, approved by the State of Design or State of Registry; and

c) where the helicopter is operated in accordance with a MEL, have information relevant to the helicopter RCP specification capabilities included in the MEL.

Note.— Information on the performance-based communication and surveillance (PBCS) concept and guidance material on its implementation are contained in the Performance-based Communication and Surveillance (PBCS) Manual *(Doc 9869).*

5.1.7 The State of Registry shall establish criteria for operations where an RCP specification for PBC has been prescribed.

5.1.8 In establishing criteria for operations where an RCP specification for PBC has been prescribed, the State of Registry shall require that the operator/owner establish:

a) normal and abnormal procedures, including contingency procedures;

b) flight crew qualification and proficiency requirements, in accordance with appropriate RCP specifications;

c) a training programme for relevant personnel consistent with the intended operations; and

d) appropriate maintenance procedures to ensure continued airworthiness, in accordance with appropriate RCP specifications.

5.1.9 The State of Registry shall ensure that, in respect of those helicopters mentioned in 5.1.6, adequate provisions exist for:

a) receiving the reports of observed communication performance issued by monitoring programmes established in accordance with Annex 11, Chapter 3, 3.3.5.2; and

b) taking immediate corrective action for individual helicopters, helicopter types or operators identified in such reports as not complying with the RCP specification(s).

5.2 NAVIGATION EQUIPMENT

5.2.1 A helicopter shall be provided with navigation equipment which will enable it to proceed:

a) in accordance with its flight plan; and

b) in accordance with the requirements of air traffic services;

except when, if not so precluded by the appropriate authority, navigation for flights under VFR is accomplished by visual reference to landmarks. For international general aviation, landmarks shall be located at least every 110 km (60 NM).

5.2.2 For operations where a navigation specification for performance-based navigation (PBN) has been prescribed, a helicopter shall, in addition to the requirements specified in 5.2.1:

a) be provided with navigation equipment which will enable it to operate in accordance with the prescribed navigation specification(s);

b) have information relevant to the helicopter navigation specification capabilities listed in the flight manual or other helicopter documentation approved by the State of Design or State of Registry; and

c) where the helicopter is operated in accordance with a MEL, have information relevant to the helicopter navigation specification capabilities included in the MEL.

Note.— Guidance on helicopter documentation is contained in the Performance-based Navigation (PBN) Manual *(Doc 9613).*

5.2.3 The State of Registry shall establish criteria for operations where a navigation specification for PBN has been prescribed.

5.2.4 In establishing criteria for operations where a navigation specification for PBN has been prescribed, the State of Registry shall require that the operator/owner establish:

a) normal and abnormal procedures, including contingency procedures;

b) flight crew qualification and proficiency requirements, in accordance with the appropriate navigation specifications;

c) training for relevant personnel consistent with the intended operations; and

d) appropriate maintenance procedures to ensure continued airworthiness, in accordance with the appropriate navigation specifications.

Note 1.— Guidance on safety risks and mitigations for PBN operations, in accordance with Annex 19, are contained in the Performance-based Navigation (PBN) Operational Approval Manual *(Doc 9997).*

Note 2.— Electronic navigation data management is an integral part of normal and abnormal procedures.

5.2.5 The State of Registry shall issue a specific approval for operations based on PBN authorization required (AR) navigation specifications.

Note.— Guidance on specific approvals for PBN authorization required (AR) navigation specifications is contained in the Performance-based Navigation (PBN) Operational Approval Manual *(Doc 9997).*

5.2.6 The helicopter shall be sufficiently provided with navigation equipment to ensure that, in the event of the failure of one item of equipment at any stage of the flight, the remaining equipment will enable the helicopter to navigate in accordance with 5.2.1 and, where applicable, 5.2.2.

Note.— For international general aviation, this requirement may be met by means other than the duplication of equipment.

5.2.7 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.

5.3 SURVEILLANCE EQUIPMENT

5.3.1 A helicopter shall be provided with surveillance equipment which will enable it to operate in accordance with the requirements of air traffic services.

5.3.2 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 5.3.1:

a) be provided with surveillance equipment which will enable it to operate in accordance with the prescribed RSP specification(s);

b) 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 State of Registry; and

c) where the helicopter is operated in accordance with a MEL, have information relevant to the helicopter RSP specification capabilities included in the MEL.

Note 1.— Information on surveillance equipment is contained in the Aeronautical Surveillance Manual *(Doc 9924).*

Note 2.— Information on RSP specifications for performance-based surveillance is contained in the Performance-based Communication and Surveillance (PBCS) Manual *(Doc 9869).*

5.3.3 The State of Registry shall establish criteria for operations where an RSP specification for PBS has been prescribed.

5.3.4 In establishing criteria for operations where an RSP specification for PBS has been prescribed, the State of Registry shall require that the operator/owner establish:

a) normal and abnormal procedures, including contingency procedures;

b) flight crew qualification and proficiency requirements, in accordance with appropriate RSP specifications;

c) a training programme for relevant personnel consistent with the intended operations; and

d) appropriate maintenance procedures to ensure continued airworthiness, in accordance with appropriate RSP specifications.

5.3.5 The State of Registry shall ensure that, in respect of those helicopters mentioned in 5.3.2, adequate provisions exist for:

a) receiving the reports of observed surveillance performance issued by monitoring programmes established in accordance with Annex 11, Chapter 3, 3.3.5.2; and

b) taking immediate corrective action for individual helicopter, helicopter types or operators identified in such reports as not complying with the RSP specification(s).

CHAPTER 6. HELICOPTER CONTINUING AIRWORTHINESS

Note 1.— For the purpose of this chapter "helicopter" includes: engines, power transmissions, rotors, components, accessories, instruments, equipment and apparatus including emergency equipment.

Note 2.— Guidance on continuing airworthiness requirements is contained in the Airworthiness Manual *(Doc 9760)*.

6.1 OPERATOR'S CONTINUING AIRWORTHINESS RESPONSIBILITIES

6.1.1 The owner of a helicopter, or in the case where it is leased, the lessee, shall ensure that:

a) the helicopter is maintained in an airworthy condition;

b) the operational and emergency equipment necessary for the intended flight is serviceable;

c) the certificate of airworthiness of the helicopter remains valid; and

d) the maintenance of the helicopter is performed in accordance with a maintenance programme acceptable to the State of Registry.

6.1.2 The owner or the lessee shall not operate the helicopter unless maintenance on the helicopter, including any associated engine, rotor and part, is carried out:

a) by an organization complying with Annex 8, Part II, Chapter 6 that is either approved by the State of Registry of the helicopter or is approved by another Contracting State and is accepted by the State of Registry; or

b) by a person or organization in accordance with procedures that are authorized by the State of Registry;

and there is a maintenance release in relation to the maintenance carried out.

6.2 CONTINUING AIRWORTHINESS RECORDS

6.2.1 The owner shall ensure that the following records are kept for the periods mentioned in 6.2.2:

a) the total time in service hours, calendar time and cycles, as appropriate of the helicopter, and all life-limited components;

b) the current status of compliance with all mandatory continuing airworthiness information;

c) appropriate details of modifications and repairs to the helicopter;

d) the time in service (hours, calendar time and cycles, as appropriate) since last overhaul of the helicopter or its components, subject to a mandatory overhaul life;

e) the current status of the helicopter's compliance with the maintenance programme; and

f) the detailed maintenance records to show that all requirements for signing of a maintenance release have been met.

6.2.2 The records in 6.2.1 a) to e) shall be kept for a minimum period of 90 days after the unit to which they refer has been permanently withdrawn from service, and the records in 6.2.1 f) for a minimum period of one year after the signing of the maintenance release.

6.2.3 The lessee of a helicopter shall comply with the requirements of 6.2.1 and 6.2.2, as applicable, while the helicopter is leased.

6.2.4 Records kept and transferred in accordance with 6.2 shall be maintained in a form and format that ensures readability, security and integrity of the records at all times.

Note 1.— The form and format of the records may include, for example, paper records, film records, electronic records or any combination thereof.

Note 2.— Guidance regarding electronic aircraft continuing airworthiness records is included in the Airworthiness Manual (Doc 9760).

6.3 CONTINUING AIRWORTHINESS INFORMATION

The owner of a helicopter over 3 175 kg maximum certificated take-off mass, or in the case where it is leased, the lessee, shall, as required by the State of Registry, ensure that the information resulting from maintenance and operational experience with respect to continuing airworthiness is transmitted as required by Annex 8, Part II, 4.2.3.1 f) and 4.2.4.

6.4 MODIFICATIONS AND REPAIRS

All modifications and repairs shall comply with airworthiness requirements acceptable to the State of Registry. Procedures shall be established to ensure that the substantiating data supporting compliance with the airworthiness requirements are retained.

6.5 MAINTENANCE RELEASE

6.5.1 When maintenance is carried out by an approved maintenance organization, the maintenance release shall be issued by the approved maintenance organization in accordance with the provisions of Annex 8, Part II, 6.8.

6.5.2 When maintenance is not carried out by an approved maintenance organization, the maintenance release shall be completed and signed by a person appropriately licensed in accordance with Annex 1 to certify that the maintenance work performed has been completed satisfactorily and in accordance with data and procedures acceptable to the State of Registry.

6.5.3 When maintenance is not carried out by an approved maintenance organization, the maintenance release shall include the following:

a) basic details of the maintenance carried out;

b) the date such maintenance was completed; and

c) the identity of the person or persons signing the release.

CHAPTER 7. HELICOPTER FLIGHT CREW

7.1 QUALIFICATIONS

The pilot-in-command shall ensure that the licences of each flight crew member have been issued or rendered valid by the State of Registry, and are properly rated and of current validity, and shall be satisfied that flight crew members have maintained competence.

Note.— Information for pilots on flight procedure parameters and operational procedures is contained in PANS-OPS (Doc 8168), Volume I. Criteria for the construction of visual and instrument flight procedures are contained in PANS-OPS (Doc 8168), Volume II. Obstacle clearance criteria and procedures used in certain States may differ from PANS-OPS and knowledge of these differences is important for safety reasons.

7.2 COMPOSITION OF THE FLIGHT CREW

The number and composition of the flight crew shall not be less than that specified in the flight manual or other documents associated with the certificate of airworthiness.

ANNEX 6 — PART III

APPENDICES

APPENDIX 1. SAFETY OVERSIGHT OF AIR OPERATORS

(Section II, Chapter 2, 2.2.1.8, refers)

Note 1.— Appendix 1 to Annex 19 contains the general provisions for a State safety oversight system.

Note 2.— This Appendix provides additional provisions for the safety oversight of international commercial air transport operators.

1. PRIMARY AVIATION LEGISLATION

The State of the Operator shall enact and implement laws that enable the State to regulate the certification and continued supervision of air operators, and the resolution of safety issues identified by the authority, and to ensure that compliance will result in an acceptable level of safety performance for the operations undertaken.

Note 1.— The term authority, as used in this Appendix, refers to the Civil Aviation Authority as well as equivalent organizations, including inspectors and staff.

Note 2.— Guidance on the inspection, certification and continued surveillance of operations is contained in the Manual of Procedures for Operations Inspection, Certification and Continued Surveillance *(Doc 8335) and the* Airworthiness Manual *(Doc 9760)*.

2. SPECIFIC OPERATING REGULATIONS

The State of the Operator shall adopt regulations that provide for the certification and continued surveillance of aircraft operations and the maintenance of aircraft in conformity with the Annexes to the Convention on International Civil Aviation.

3. STATE SAFETY OVERSIGHT SYSTEM AND FUNCTIONS

3.1 The State of the Operator shall ensure that the authority is responsible for the safety oversight of air operators.

3.2 The State of the Operator shall use a methodology to determine its inspector staffing requirements according to the size and complexity of civil air operations in that State.

3.3 **Recommendation.—** *The methodology in 3.2 should be documented.*

3.4 The State of the Operator shall ensure that authority inspectors have adequate support, credentials and transportation to accomplish, independently, their certification and continued surveillance tasks.

4. QUALIFIED TECHNICAL PERSONNEL

The State of the Operator shall require that the initial and recurrent training of the authority inspectors include aircraft-specific subjects.

Note.— Guidance on experience and training for inspectors is contained in the Manual of Procedures for Operations Inspection, Certification and Continued Surveillance *(Doc 8335)*.

5. TECHNICAL GUIDANCE, TOOLS AND PROVISION OF SAFETY-CRITICAL INFORMATION

5.1 The State of the Operator shall ensure that authority inspectors are provided with technical guidance manuals containing the policies, procedures and standards to be used in the certification and continued surveillance of air operators.

5.2 The State of the Operator shall ensure that authority inspectors are provided with technical guidance manuals containing the policies, procedures and standards to be used in the resolution of safety issues, including enforcement.

5.3 The State of the Operator shall ensure that authority inspectors are provided with technical guidance manuals that addresses ethics, personal conduct and the avoidance of actual or perceived conflicts of interest in the performance of official duties.

6. CERTIFICATION OBLIGATIONS

The State of the Operator shall require, prior to commencement of new commercial air transport operations, air operators to demonstrate that they can safely conduct the proposed operations.

7. CONTINUED SURVEILLANCE OBLIGATIONS

The State of the Operator shall use an ongoing surveillance plan to confirm that operators continue to meet the relevant requirements for initial certification and that each air operator is functioning satisfactorily.

8. RESOLUTION OF SAFETY ISSUES

Note.— Provisions for the resolution of safety issues are contained in Appendix 1 to Annex 19.

APPENDIX 2. ADDITIONAL REQUIREMENTS FOR OPERATIONS OF HELICOPTERS IN PERFORMANCE CLASS 3 IN INSTRUMENT METEOROLOGICAL CONDITIONS (IMC)

(Section II, Chapter 3, 3.4.1, refers)

Airworthiness and operations requirements provided in accordance with Section II, Chapter 3, 3.4.1, shall 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 Attachment E.)

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 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) 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 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 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.

1) 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;

2) maintain the operation of the stabilization system, if applicable;

3) lower the landing gear, if applicable;

4) where required, provide power to one pitot heater, which must serve an airspeed indicator clearly visible to the pilot;

5) provide for the operation of the landing light;

6) provide for one engine restart, if applicable; and

7) 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 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 State of the Operator 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 State of the Operator, who in turn shall notify the State of Design.

5.2 The State of the Operator 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 State of the Operator 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 State of the Operator.

7. FLIGHT CREW EXPERIENCE, TRAINING AND CHECKING

7.1 The State of the Operator 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 stabilized 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 State of the Operator.

Note.— Guidance on the airworthiness and operational requirements is contained in Attachment E.

APPENDIX 3. AIR OPERATOR CERTIFICATE (AOC)

(Section II, Chapter 2, 2.2.1.5 and 2.2.1.6, refers)

1. PURPOSE AND SCOPE

1.1 The AOC and its associated model-specific operations specifications shall contain the minimum information required in paragraphs 2 and 3 respectively, in a standardized format.

1.2 The air operator certificate and its associated operations specifications shall define the operations for which the operator is authorized, including specific approvals, conditions and limitations.

Note.— Attachment C, paragraph 3.2.2, contains additional information that may be listed in the operations specifications associated with the air operator certificate.

2. AOC TEMPLATE

Note.— Section II, Chapter 4, 4.1.2 requires a certified true copy of the AOC to be carried aboard.

<table>
<tr><th colspan="3">AIR OPERATOR CERTIFICATE</th></tr>
<tr><td>[1]</td><td>STATE OF THE OPERATOR[2]</td><td>[1]</td></tr>
<tr><td></td><td>ISSUING AUTHORITY[3]</td><td></td></tr>
<tr><td>AOC #[4]:
Expiry date[5]:</td><td>OPERATOR NAME[6]

Dba trading name[7]:
Operator address[8]:
Telephone[9]:
Fax:
Email:</td><td>OPERATIONAL POINTS OF CONTACT[10]

Contact details, at which operational management can be contacted without undue delay, are listed in _____[11].</td></tr>
<tr><td colspan="3">This certificate certifies that _____[12] is authorized to perform commercial air operations, as defined in the attached operations specifications, in accordance with the operations manual and the _____[13].</td></tr>
<tr><td>Date of issue[14]:</td><td colspan="2">Name and signature[15]:
Title:</td></tr>
</table>

Notes.—

1. *For use of the State of the Operator.*
2. *Replace by the name of the State of the Operator.*
3. *Replace by the identification of the issuing authority of the State of the Operator.*
4. *Unique AOC number, as issued by the State of the Operator.*
5. *Date after which the AOC ceases to be valid (dd-mm-yyyy).*
6. *Replace by the operator's registered name.*

7. Operator's trading name, if different. Insert "dba" before the trading name (for "doing business as").
8. Operator's principal place of business address.
9. Operator's principal place of business telephone and fax details, including the country code. Email to be provided if available.
10. The contact details include the telephone and fax numbers, including the country code, and the email address (if available) at which operational management can be contacted without undue delay for issues related to flight operations, airworthiness, flight and cabin crew competency, dangerous goods and other matters as appropriate.
11. Insert the controlled document, carried on board, in which the contact details are listed, with the appropriate paragraph or page reference. e.g.: "Contact details are listed in the operations manual, Gen/Basic, Chapter 1, 1.1" or "… are listed in the operations specifications, page 1" or "… are listed in an attachment to this document".
12. Operator's registered name.
13. Insert reference to the appropriate civil aviation regulations.
14. Issuance date of the AOC (dd-mm-yyyy).
15. Title, name and signature of the authority representative. In addition, an official stamp may be applied on the AOC.

3. OPERATIONS SPECIFICATIONS FOR EACH AIRCRAFT MODEL

Note.— Section II, Chapter 4, 4.1.2, requires a copy of the operations specifications of this section to be carried aboard.

3.1 For each helicopter model in the operator's fleet, identified by helicopter make, model and series, the following information shall be included: 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, special limitations and specific approvals.

Note.— If specific approvals and limitations are identical for two or more models, these models may be grouped in a single list.

3.2 The operations specifications layout referred to in Chapter 2, 2.2.1.6, shall be as follows:

Note.— The MEL constitutes an integral part of the operations manual.

OPERATIONS SPECIFICATIONS

(subject to the approved conditions in the operations manual)

ISSUING AUTHORITY CONTACT DETAILS[1]

Telephone: _____ Fax: _____ Email: _____

AOC#[2]: _____ Operator name[3]: _____ Date[4]: _____ Signature: _____

Dba trading name: _____

Aircraft model[5]:

Types of operation: Commercial air transportation ☐ Passengers ☐ Cargo ☐ Other[6]: _____

Area(s) of operation[7]:

Special limitations[8]:

SPECIFIC APPROVAL	YES	NO	DESCRIPTION [9]	REMARKS
Dangerous goods	☐	☐		
Low visibility operations				
Approach and landing	☐	☐	CAT[10]: _____ RVR: _____ m DH: _____ ft	
Take-off	☐	☐	RVR[11]: _____ m	
Operational credit(s)	☐	☐	[12]	
AR navigation specifications for PBN operations[13]	☐	☐		
Continuing airworthiness			[14]	
EFB	☐	☐	[15]	
Other	☐	☐	[16]	

Notes.—

1. *Telephone contact details of the authority, including the country code. Email and fax to be provided if available.*
2. *Insert the associated AOC number.*
3. *Insert the operator's registered name and the operator's trading name, if different. Insert "dba" before the trading name (for "doing business as").*

4. *Issuance date of the operations specifications (dd-mm-yyyy) and signature of the authority representative.*
5. *Insert the Commercial Aviation Safety Team (CAST)/ICAO designation of the helicopter make, model and series, or master series if a series has been designated (e.g. Bell-47G-3 or SIKORSKY-S55). The CAST/ICAO taxonomy is available at: http://www.intlaviationstandards.org.*
6. *Other type of transportation to be specified (e.g. emergency medical service).*
7. *List the geographical area(s) of authorized operation (by geographical coordinates or specific routes, flight information region or national or regional boundaries), as defined by the issuing authority.*
8. *List the applicable special limitations (e.g. VFR only, day only).*
9. *List in this column the most permissive criteria for each specific approval (with appropriate criteria).*
10. *Insert the applicable instrument approach operation classified as Type B (CAT II, etc.). Insert the minimum RVR in metres and decision height in feet. One line is used per listed approach category.*
11. *Insert the approved minimum take-off RVR in metres, or the equivalent horizontal visibility if RVR is not used. One line per approval may be used if different approvals are granted.*
12. *List the airborne capabilities (e.g. automatic landing, HUD, EVS, SVS, CVS) and associated operational credit(s) granted.*
13. *Performance-based navigation (PBN): one line is used for each PBN AR navigation specification approval (e.g. RNP AR APCH), with appropriate limitations listed in the "Descriptions" column.*
14. *Insert the name of the person/organization responsible for ensuring that the continuing airworthiness of the helicopter is maintained and the regulation that requires the work, i.e. within the AOC regulation or a specific approval (e.g. EC2042/2003, Part M, Subpart G).*
15. *List the EFB functions used for the safe operation of helicopters and any applicable limitations.*
16. *Other authorizations or data can be entered here, using one line (or one multi-line block) per authorization (e.g. special approach authorization, special operations, specification of which performance class(es) the aircraft can be operated in).*

APPENDIX 4. FLIGHT RECORDERS

(Section II, Chapter 4, 4.3 and Section III, Chapter 4, 4.7, refer)

The material in this Appendix concerns flight recorders intended for installation in helicopters engaged in international air navigation. Crash-protected flight recorders comprise one or more of the following:

— a flight data recorder (FDR),
— a cockpit voice recorder (CVR),
— an airborne image recorder (AIR),
— 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.

Lightweight flight recorders comprise one or more of the following:

— an aircraft data recording system (ADRS),
— a cockpit audio recording system (CARS),
— an airborne image recording system (AIRS),
— a data link recording system (DLRS).

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 CARS or the ADRS.

1. GENERAL REQUIREMENTS

1.1 Non-deployable flight recorder containers shall be painted a distinctive orange colour.

1.2 Non-deployable crash-protected flight recorder containers shall:

a) carry reflective material to facilitate their location; and

b) have securely attached an automatically activated underwater locating device operating at a frequency of 37.5 kHz. At the earliest practical date, but not later than 1 January 2018, this device shall operate for a minimum of 90 days.

1.3 Automatic deployable flight recorder containers shall:

a) be painted a distinctive orange colour, however the surface visible from outside the helicopter may be of another colour;

b) carry reflective material to facilitate their location; and

c) have an integrated automatically activated ELT.

1.4 The flight recorder systems shall be installed so that:

a) the probability of damage to the recordings is minimized;

b) there is an aural or visual means for pre-flight checking that the flight recorder systems are operating properly;

c) 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

d) for helicopters for which the individual certificate of airworthiness is first issued on or after 1 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 minimized.

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 specialized replay or copying techniques.

1.5 The crash-protected flight recorders shall be installed so that they receive electrical power from a bus that provides the maximum reliability for operation of the flight recorders without jeopardizing service to essential or emergency loads.

1.6 The lightweight flight recorders shall be connected to a power source having the characteristics which ensure proper and reliable recording in the operational environment.

1.7 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.

1.8 Means shall be provided for an accurate time correlation between the flight recorder systems functions.

1.9 The flight recorder system manufacturer shall provide the appropriate certificating authority with the following information in respect of the flight recorder systems:

a) manufacturer’s operating instructions, equipment limitations and installation procedures;

b) parameter origin or source and equations which relate counts to units of measurement;

c) manufacturer’s test reports; and

d) detailed information to ensure the continued serviceability of the flight recorder system.

1.10 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 in this Appendix.

Note 2.— Conditions related to the continued serviceability of a flight recorder system are defined in section 6 of this appendix. The Manual on Flight Recorder System Maintenance (FRSM) *(Doc 10104) provides guidance on maintenance tasks associated with flight recorder systems.*

2. FLIGHT DATA RECORDER (FDR) AND AIRCRAFT DATA RECORDING SYSTEM (ADRS)

2.1 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.

2.2 Parameters to be recorded

Note.— In previous editions of Annex 6, Part III, types of recorders were defined to capture the first evolutions of FDRs.

2.2.1 The parameters that satisfy the requirements for FDRs, are listed in Table A4-1. 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.

2.2.2 The following parameters shall satisfy the requirements for flight path and speed:

— pressure altitude
— indicated airspeed
— outside air temperature
— heading
— normal acceleration
— lateral acceleration
— longitudinal acceleration (body axis)
— time or relative time count
— navigation data*: drift angle, wind speed, wind direction, latitude/longitude
— radio altitude*

2.2.3 If further FDR recording capacity is available, recording of the following additional information shall be considered:

a) additional operational information from electronic displays, such as electronic flight instrument systems (EFIS), electronic centralized aircraft monitor (ECAM) and engine indication and crew alerting system (EICAS); and

b) additional engine parameters (EPR, N_1, fuel flow, etc.).

2.2.4 The parameters that satisfy the requirements for ADRS are the first 7 parameters listed in Table A4-3.

2.2.5 If further ADRS recording capacity is available, the recording of any parameters from 8 onwards defined in Table A4-3 shall be considered.

2.3 Additional information

2.3.1 The measurement range, recording interval and accuracy of parameters on installed equipment is usually verified by methods approved by the appropriate certificating authority.

2.3.2 Documentation concerning parameter allocation, conversion equations, periodic calibration and other serviceability/maintenance information shall be maintained by the operator/owner. The documentation shall be sufficient to ensure that accident investigation authorities have the necessary information to read out the data in engineering units.

3. COCKPIT VOICE RECORDER (CVR) AND COCKPIT AUDIO RECORDING SYSTEM (CARS)

3.1 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.

3.2 Signals to be recorded

3.2.1 The CVR shall record simultaneously on four separate channels, or more, at least the following:

a) voice communication transmitted from or received in the aircraft by radio;

b) aural environment on the flight deck;

c) voice communication of flight crew members on the flight deck using the interphone system, if installed;

d) voice or audio signals identifying navigation or approach aids introduced in the headset or speaker; and

e) voice communication of flight crew members using the passenger address system, if installed.

3.2.2 **Recommendation**.—*The preferred CVR audio allocation should be as follows:*

a) pilot-in-command audio panel;

b) co-pilot audio panel;

c) additional flight crew positions and time reference; and

d) cockpit area microphone.

3.2.3 The CARS shall record simultaneously on two separate channels, or more, at least the following:

a) voice communication transmitted from or received in the helicopter by radio;

b) aural environment on the flight deck; and

c) voice communication of flight crew members on the flight deck using the helicopter’s interphone system, if installed.

3.2.4 **Recommendation**.— *The preferred CARS audio allocation should be as follows:*

a) voice communication; and

b) aural environment on the flight deck.

4. AIRBORNE IMAGE RECORDER (AIR) AND AIRBORNE IMAGE RECORDING SYSTEM (AIRS)

4.1 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.

4.2 Classes

4.2.1 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 AIRs or AIRS in this document.

4.2.2 A Class B AIR or AIRS captures data link message displays.

4.2.3 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 where an FDR is not required.

5. DATA LINK RECORDER (DLR)

5.1 Applications to be recorded

5.1.1 Where the helicopter flight path is authorized 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 helicopter. As far as practicable, the time the messages were displayed to the flight crew and the time of the responses shall too 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.

5.1.2 Messages applying to the applications listed in Table A4-2 shall be recorded. Applications without the asterisk (*) are mandatory applications which shall be recorded regardless of the system complexity. Applications with an (*) are to be recorded only as far as is practicable given the architecture of the system.

6. INSPECTIONS OF FLIGHT RECORDER SYSTEMS

6.1 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.

6.2 FDR systems or ADRS, CVR systems or CARS, and AIR systems or AIRS shall have recording inspection intervals of one year; subject to the approval from the appropriate regulatory authority, this period may be extended to two years, provided these systems have demonstrated a high integrity of serviceability and self-monitoring. DLR systems or DLRS shall have recording inspection intervals of two years; subject to the approval from the appropriate regulatory authority, this period may be extended to four years, provided these systems have demonstrated high integrity of serviceability and self-monitoring.

6.3 Recording inspections shall be carried out as follows:

a) an analysis of the recorded data from the flight recorders shall ensure that the recorder operates correctly for the nominal duration of the recording;

b) 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;

c) 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;

d) an 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;

e) 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

f) 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.

g) an examination of the recorded messages on the DLR or DLRS shall be carried out by replay of the DLR or DLRS recording.

6.4 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.

6.5 A report of the recording inspection shall be made available on request to regulatory authorities for monitoring purposes.

6.6 Calibration of the FDR system:

a) for those parameters which have sensors dedicated only to the FDR and are not checked by other means, recalibration shall be carried out 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

b) 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.

Table A4-1. 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		—	—

Serial number	Parameter	Applicability	Measurement range	Maximum sampling and recording interval (seconds)	Accuracy limits (sensor input compared to FDR readout)	Recording resolution
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
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/m^2 (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

Serial number	Parameter	Applicability	Measurement range	Maximum sampling and recording interval (seconds)	Accuracy limits (sensor input compared to FDR readout)	Recording resolution
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)
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 (TIT/ITT)		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

Serial number	Parameter	Applicability	Measurement range	Maximum sampling and recording interval (seconds)	Accuracy limits (sensor input compared to FDR readout)	Recording resolution
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
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/alerts 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	

Serial number	Parameter	Applicability	Measurement range	Maximum sampling and recording interval (seconds)	Accuracy limits (sensor input compared to FDR readout)	Recording resolution
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

Table A4-2. Description of Applications for Data Link Recorders

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 helicopter 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 helicopter.
*: Applications that are to be recorded only as far as is practicable given the architecture of the system.

Table A4-3. Parameter Characteristics for Aircraft Data Recording Systems

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 5. GENERAL AVIATION SPECIFIC APPROVALS

(Section III, Chapter 1, 1.4, refers)

1. PURPOSE AND SCOPE

1.1 Specific approvals shall have a standardized format which contains the minimum information required in the specific approval template.

Note.— When the operations to be conducted require a specific approval, a copy of the document(s) needs to be carried on board (see Section III, Chapter 4, 4.1.3.1).

2. SPECIFIC APPROVAL TEMPLATE

SPECIFIC APPROVAL

ISSUING AUTHORITY and CONTACT DETAILS[1]

Issuing Authority[1] _____

Address _____

Signature: _____ Date[2]: _____

Telephone: _____ Fax: _____ Email: _____

OWNER/OPERATOR

Name[3]: _____ Address: _____

Telephone: _____ Fax: _____ Email: _____

Aircraft model[4] and registration marks:

SPECIFIC APPROVAL	YES	NO	DESCRIPTION[5]	REMARKS
Low visibility operations				
Approach and landing	☐	☐	CAT[6]: _____ RVR: _____ m DH: _____ ft	
Take-off	☐	☐	RVR[7]: _____ m	
Operational credit(s)	☐	☐	[8]	
RVSM	☐	☐		
AR navigation specifications for PBN operations[9]	☐	☐		
EFB	☐	☐	[10]	
Other	☐	☐	[11]	

Notes.—

1. *Civil Aviation Authority name and contact details, including the telephone country code and email if available.*
2. *Issuance date of the specific approval (dd-mm-yyyy) and signature of the authority representative.*
3. *Owner or operator's name and address.*
4. *Insert the helicopter make, model and series, or master series, if a series has been designated The CAST/ICAO taxonomy is available at: http://www.intlaviationstandards.org/.*
5. *List in this column the most permissive criteria for each specific approval (with appropriate criteria).*
6. *Insert the applicable precision approach category (CAT II or III). Insert the minimum RVR in metres and decision height in feet. One line is used per listed approach category.*
7. *Insert the approved minimum take-off RVR in metres, or the equivalent horizontal visibility if RVR is not used. One line per approval may be used if different approvals are granted.*
8. *List the airborne capabilities (e.g. automatic landing, HUD, EVS, SVS, CVS) and associated operational credit(s) granted.*
9. *Performance-based navigation (PBN): one line is used for each PBN AR navigation specification approval (e.g. RNP AR APCH), with appropriate limitations listed in the "Description" column.*

10. List the EFB functions used for the safe operation of helicopters and any applicable limitations.

11. Other specific approvals or data can be entered here, using one line (or one multi-line block) per approval (e.g. specific approach operations approval).

———————————

APPENDIX 6. ARTICLE 83 *bis* AGREEMENT SUMMARY

(Section II, Chapter 4, 4.1.5.4 and Section III, Chapter 4, 4.13.4, refer)

Note.— Section II, Chapter 4, 4.1.5.1 and Section III, Chapter 4, 4.13.1, require a certified true copy of the agreement summary to be carried on board.

1. Purpose and scope

Recommendation.— *The Article 83* bis *agreement summary should contain the information in the template at paragraph 2 or 3 as applicable, in a standardized format.*

2. Article 83 *bis* agreement summary for commercial air transport

ARTICLE 83 *bis* AGREEMENT SUMMARY		
Title of the Agreement:		
State of Registry:		Focal point:
State of the principal location of a general aviation operator:		Focal point:
Date of signature:	By State of Registry[1]:	
	By State of the Operator[1]:	
Duration:	Start Date[1]:	End Date (if applicable)[2]:
Languages of the Agreement		
ICAO Registration No.:		
Umbrella Agreement (if any) with ICAO Registration number:		

Convention on International Civil Aviation	**ICAO Annexes affected by the transfer of responsibility in respect of certain functions and duties to the State of the principal location of a general aviation operator**		
Article 12: Rules of the Air	Annex 2, all chapters	Yes ☐ No ☐	
Article 30 a): Aircraft radio equipment	Radio Station Licence	Yes ☐ No ☐	
Articles 30 b) and 32 a): Licenses of personnel	Annex 1, Chapters 1, 2, 3 and 6; and Annex 6, Part I, Radio Operator; or Annex 6, Part II (qualifications and/or flight crew member licensing); or Annex 6, Part III, Section II (composition of the flight crew) (radio operator); or Annex 6, Part III, Section III (qualifications)	Yes ☐ No ☐	Annex 6: [Specify Part and paragraph][3]
Article 31: Certificates of Airworthiness	Annex 6 Part I or Part III, Section II	Yes ☐ No ☐	[Specify Part and chapters][3]
	Annex 6 Part II or Part III, Section III	Yes ☐ No ☐	[Specify Part and chapters][3]
	Annex 8 Part II, Chapters 3 and 4	Yes ☐ No ☐	[Specify chapters][3]

Aircraft affected by the transfer of responsibilities to the State of the principal location of a general aviation operator					
Aircraft make, model, series	Nationality and registration marks	Serial No	AOC No. (Commercial air transport)	Dates of transfer of responsibilities	
				From[1]	To (if applicable)[2]

Notes.—

1. *dd/mm/yyyy.*
2. *dd/mm/yyyy or N/A if not applicable.*
3. *Square brackets indicate information that needs to be provided.*

3. Article 83 *bis* agreement summary for general aviation

ARTICLE 83 *bis* AGREEMENT SUMMARY		
Title of the Agreement:		
State of Registry:		Focal point:
State of the principal location of a general aviation operator:		Focal point:
Date of signature:	By State of Registry[1]:	
	By State of the principal location of a general aviation operator[1]:	
Duration:	Start Date[1]:	End Date (if applicable)[2]:
Languages of the Agreement		
ICAO Registration No.:		
Umbrella Agreement (if any) with ICAO Registration number:		

Convention on international Civil Aviation	**ICAO Annexes affected by the transfer of responsibility in respect of certain functions and duties to the State of the principal location of a general aviation operator**		
Article 12: Rules of the Air	Annex 2, all chapters	Yes ☐ No ☐	
Article 30 a): Aircraft radio equipment	Radio Station Licence	Yes ☐ No ☐	
Articles 30 b) and 32 a): Licenses of personnel	Annex 1, Chapters 1, 2, 3 and 6; and Annex 6, Part I, Radio Operator; or Annex 6, Part II (qualifications and/or flight crew member licensing); or Annex 6, Part III, Section II (composition of the flight crew) (radio operator); or Annex 6, Part III, Section III (qualifications)	Yes ☐ No ☐	Annex 6: [Specify Part and paragraph][3]
Article 31: Certificates of Airworthiness	Annex 6 Part I or Part III, Section II	Yes ☐ No ☐	[Specify Part and chapters][3]
	Annex 6 Part II or Part III, Section III	Yes ☐ No ☐	[Specify Part and chapters][3]
	Annex 8 Part II, Chapters 3 and 4	Yes ☐ No ☐	[Specify chapters][3]

Aircraft affected by the transfer of responsibilities to the State of the principal location of a general aviation operator					
Aircraft make, model, series	Nationality and registration marks	Serial No	AOC No. (Commercial air transport)	Dates of transfer of responsibilities	
				From[1]	To (if applicable)[2]

Notes.—

1. dd/mm/yyyy.
2. dd/mm/yyyy or N/A if not applicable.
3. Square brackets indicate information that needs to be provided.

APPENDIX 7. FATIGUE RISK MANAGEMENT SYSTEM (FRMS) REQUIREMENTS

(Section II, Chapter 2, 2.8, refers)

Note.— Guidance on the development and implementation of FRMS regulations is contained in the Manual for the Oversight of Fatigue Management Approaches *(Doc 9966).*

A 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 organization;

d) be communicated, with visible endorsement, to all the relevant areas and levels of the organization;

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.

Note.— Effective safety reporting is described in the Safety Management Manual *(Doc 9859).*

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

Note.— Significant deviations are described in the Manual for the Oversight of Fatigue Management Approaches *(Doc 9966).*

g) FRMS outputs including findings from collected data, recommendations and actions taken.

2. FATIGUE RISK MANAGEMENT PROCESSES

2.1 Identification of hazards

Note.— Legal guidance for the protection of information from safety data collection and processing systems is contained in Attachment B to the first edition of Annex 19.

2.1.1 The operator shall develop and maintain three fundamental and documented processes for fatigue hazard identification:

Predictive

2.1.1.1 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.

Proactive

2.1.1.2 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.

Reactive

2.1.1.3 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 minimized. As a minimum, the process shall 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.

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 organization 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 organizational 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.

APPENDIX 8. CONTENTS OF AN OPERATIONS MANUAL

Supplementary to Section II, Chapter 2, 2.2.3.1

1. ORGANIZATION

1.1 An operations manual, which may be issued in separate parts corresponding to specific aspects of operations, provided in accordance with Section II, Chapter 2, 2.2.3.1 shall be organized with the following contents and structure:

a) general;

b) aircraft operating information;

c) routes and aerodromes; and

d) training.

2. CONTENTS

The operations manual referred to in 1.1 shall contain at the least the following:

2.1 General

2.1.1 Instructions outlining the responsibilities of operations personnel pertaining to the conduct of flight operations.

2.1.2 Information and policy relating to fatigue management including:

a) policies pertaining to the flight time, flight duty periods, duty period limitations and rest requirements for flight and cabin crew members, in accordance with Section II, Chapter 2, 2.8; and

b) where applicable, policy and documentation pertaining to the operator's FRMS, in accordance with Appendix 7.

2.1.3 A list of the navigation equipment to be carried, including any requirements relating to operations where performance-based navigation is prescribed.

2.1.4 The circumstances in which a radio listening watch is to be maintained.

2.1.5 The method for determining minimum flight altitudes.

2.1.6 The methods for determining heliport operating minima.

2.1.7 Safety precautions during refuelling with passengers on board.

2.1.8 Ground handling arrangements and procedures.

2.1.9 Procedures, as prescribed in Annex 12, for pilots-in-command observing an accident.

2.1.10 The flight crew for each type of operation including the designation of the succession of command.

2.1.11 Specific instructions for the computation of the quantities of fuel and oil to be carried, having regard to all circumstances of the operation including the possibility of loss of pressurization and the failure of one or more engines while en-route.

2.1.12 The conditions under which oxygen shall be used and the amount of oxygen determined in accordance with Section II, Chapter 2, 2.3.8.2.

2.1.13 Instructions for mass and balance control.

2.1.14 Instructions for the conduct and control of ground de-icing/anti-icing operations.

2.1.15 The specifications for the operational flight plan.

2.1.16 Standard operating procedures (SOP) for each phase of flight.

2.1.17 Instructions on the use of normal checklists and the timing of their use.

2.1.18 Departure contingency procedures.

2.1.19 Instructions on the maintenance of altitude awareness.

2.1.20 Instructions on the clarification and acceptance of ATC clearances, particularly where terrain clearance is involved.

2.1.21 Departure and approach briefings.

2.1.22 Route and destination familiarization.

2.1.23 Conditions required to commence or to continue an instrument approach.

2.1.24 Instructions for the conduct of precision and non-precision instrument approach procedures.

2.1.25 Allocation of flight crew duties and procedures for the management of crew workload during night and IMC instrument approach operations.

2.1.26 Information and instructions relating to the interception of civil aircraft including:

a) procedures, as prescribed in Annex 2, for pilots-in-command of intercepted aircraft; and

b) visual signals for use by intercepting and intercepted aircraft, as contained in Annex 2.

2.1.27 Details of the safety management system (SMS) provided in accordance with Chapters 3 and 4 of Annex 19.

2.1.28 Information and instructions on the carriage of dangerous goods, including action to be taken in the event of an emergency.

Note.— Guidance material on the development of policies and procedures for dealing with dangerous goods incidents on board aircraft is contained in Emergency Response Guidance for Aircraft Incidents Involving Dangerous Goods *(Doc 9481).*

2.1.29 Security instructions and guidance.

2.1.30 The search procedure checklist provided in accordance with Section II, Chapter 11, 11.1.

2.1.31 Instructions and training requirements for the use automatic landing systems, a HUD or equivalent displays and EVS, SVS or CVS equipment as applicable..

2.1.32 Instructions and training requirements for the use of the EFB, as applicable.

2.2 Aircraft operating information

2.2.1 Certification limitations and operating limitations.

2.2.2 The normal, abnormal and emergency procedures to be used by the flight crew and the checklists relating thereto as required by Section II, Chapter 4, 4.1.4.

2.2.3 Flight planning data for pre-flight and in-flight planning with different thrust/power and speed settings.

2.2.4 Instructions and data for mass and balance calculations.

2.2.5 Instructions for aircraft loading and securing of load.

2.2.6 Aircraft systems, associated controls and instructions for their use, as required by Section II, Chapter 4, 4.1.4.

2.2.7 The minimum equipment list for the helicopter types operated and specific operations authorized, including any requirements relating to operations where performance-based navigation is prescribed.

2.2.8 Checklist of emergency and safety equipment and instructions for its use.

2.2.9 Emergency evacuation procedures, including type-specific procedures, crew coordination, assignment of crew's emergency positions and the emergency duties assigned to each crew member.

2.2.10 The normal, abnormal and emergency procedures to be used by the cabin crew, the checklists relating thereto and aircraft systems information as required, including a statement related to the necessary procedures for the coordination between flight and cabin crew.

2.2.11 Survival and emergency equipment for different routes and the necessary procedures to verify its normal functioning before take-off, including procedures to determine the required amount of oxygen and the quantity available.

2.2.12 The ground-air visual signal code for use by survivors, as contained in Annex 12.

2.3 Routes, aerodromes and heliports

2.3.1 A route guide to ensure that the flight crew will have, for each flight, information relating to communication facilities, navigation aids, aerodromes, instrument approaches, instrument arrivals and instrument departures, as applicable for the operation, and such other information as the operator may deem necessary for the proper conduct of flight operations.

2.3.2 The minimum flight altitudes for each route to be flown.

2.3.3 Heliport operating minima for each of the heliports that are likely to be used as heliports of intended landing or as alternate heliports.

2.3.4 The increase of heliport operating minima in case of degradation of approach or heliport facilities.

2.3.5 Instructions for the use of aerodrome operating minima for instrument approaches applicable to the use of eligible equipment for operational credit.

2.4 Training

2.4.1 Details of the flight crew training programme and requirements, as required by Section II, Chapter 7, 7.3.

2.4.2 Details of the cabin crew duties training programme as required by Section II, Chapter 10, 10.3.

2.4.3 Details of the flight operations officer/flight dispatcher training programme when employed in conjunction with a method of flight supervision in accordance with Section II, Chapter 2, 2.2.

Note.— Details of the flight operations officer/flight dispatcher training programme are contained in Section II, Chapter 8, 8.3.

ANNEX 6 — PART III

ATTACHMENTS

ATTACHMENT A. MEDICAL SUPPLIES

Supplementary to Section II, Chapter 4, 4.2.2 a)

First-aid kit

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

Universal precaution kit

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

— 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

ATTACHMENT B. MINIMUM EQUIPMENT LIST (MEL)

Supplementary to Section II, Chapter 4, 4.1.3

1. If deviations from the requirements of States in the certification of aircraft were not permitted, an aircraft could not be flown unless all systems and equipment were operable. Experience has proved that some unserviceability can be accepted in the short term when the remaining operative systems and equipment provide for continued safe operations.

2. The State should indicate through approval of a minimum equipment list those systems and items of equipment that may be inoperative for certain flight conditions with the intent that no flight can be conducted with inoperative systems and equipment other than those specified.

3. A minimum equipment list, approved by the State of the Operator, is therefore necessary for each aircraft, based on the master minimum equipment list established for the aircraft type by the organization responsible for the type design in conjunction with the State of Design.

4. The State of the Operator should require the operator to prepare a minimum equipment list designed to allow the operation of an aircraft with certain systems or equipment inoperative, provided an acceptable level of safety is maintained.

5. The minimum equipment list is not intended to provide for operation of the aircraft for an indefinite period with inoperative systems or equipment. The basic purpose of the minimum equipment list is to permit the safe operation of an aircraft with inoperative systems or equipment within the framework of a controlled and sound programme of repairs and parts replacement.

6. Operators are to ensure that no flight is commenced with multiple minimum equipment list items inoperative without determining that any interrelationship between inoperative systems or components will not result in an unacceptable degradation in the level of safety and/or undue increase in the flight crew workload.

7. The exposure to additional failures during continued operation with inoperative systems or equipment must also be considered in determining that an acceptable level of safety is being maintained. The minimum equipment list may not deviate from requirements of the flight manual limitations section, emergency procedures or other airworthiness requirements of the State of Registry or of the State of the Operator unless the appropriate airworthiness authority or the flight manual provides otherwise.

8. Systems or equipment accepted as inoperative for a flight should be placarded where appropriate and all such items should be noted in the aircraft technical log to inform the flight crew and maintenance personnel of the inoperative system or equipment.

9. For a particular system or item of equipment to be accepted as inoperative, it may be necessary to establish a maintenance procedure, for completion prior to flight, to deactivate or isolate the system or equipment. It may similarly be necessary to prepare an appropriate flight crew operating procedure.

10. The responsibilities of the pilot-in-command in accepting a helicopter for operation with deficiencies in accordance with a minimum equipment list are specified in Section II, Chapter 2, 2.3.1.

ATTACHMENT C. AIR OPERATOR CERTIFICATION AND VALIDATION

Supplementary to Section II, Chapter 2, 2.2.1

1. PURPOSE AND SCOPE

1.1 Introduction

The purpose of this Attachment is to provide guidance concerning the actions required by States in connection with the commercial air transport operator certification requirements in Chapter 2, 2.2.1, particularly the means of accomplishing and recording those actions. Equivalent guidance for GA operations can be found in Annex 6, Part II, Attachment 3.C.

1.2 Prior certification required

In accordance with Standard 2.2.1.3, the issuance of an air operator certificate (AOC) is "dependent upon the operator demonstrating" to the State that its organization, training, flight operations and maintenance arrangements are adequate considering the nature and extent of the operations to be conducted. The certification process involves the State's evaluation of each operator and a determination that the operator is capable of conducting safe operations before initial issuance of an AOC or the addition of any subsequent authorizations to an AOC.

1.3 Standard certification practices

The State of the Operator is required by Standard 2.2.1.8 to establish a certification system to ensure compliance with the required standards for the type of operation to be conducted. Several States have developed policies and procedures to comply with this certification requirement as industry capabilities evolve. While those States did not develop their certification practices in coordination with each other, their practices are remarkably similar and consistent in their requirements. The effectiveness of their practices has been validated over many years, resulting in improved safety records of operators throughout the world. Many of these certification practices have been incorporated by reference in ICAO provisions.

2. REQUIRED TECHNICAL SAFETY EVALUATIONS

2.1 Specific approval, approval and acceptance actions

2.1.1 The certification and continued surveillance of an air operator includes actions taken by a State on matters submitted for its review. The actions can be categorized as specific approvals, approvals or acceptances depending on the nature of the response by the State to the matter submitted for its review.

2.1.2 A specific approval is an approval which is documented in the Operations Specifications for Commercial Air Transport.

2.1.3 An approval is an active response by the State to a matter submitted for its review. An approval constitutes a finding or determination of compliance with the applicable standards. An approval will be evidenced by the signature of the approving official, the issuance of a document or certificate, or some other formal action taken by the State.

2.1.4 An acceptance does not necessarily require an active response by the State to a matter submitted for its review. A State may accept a matter submitted to it for review as being in compliance with the applicable standards if the State does not specifically reject all or a portion of the matter under review, usually after some defined period of time after submission.

2.1.5 The phrase "approved by the State" or similar phrases using the word "approval" are frequently used in Part III, Section II. Provisions indicating a review and implying approval or at least "acceptance" by the State occur even more frequently in Part III, Section II. In addition to these specific phrases, Part III, Section II contains numerous references to requirements which would, as a minimum, create the need for at least a technical review by the State. This Attachment groups and outlines those specific Standards and Recommended Practices for ease of use by States.

2.1.6 The State should make or arrange for a technical safety evaluation before issuing the specific approval, approval or acceptance. The evaluation should:

a) be accomplished by a person with specific qualifications to make such a technical evaluation;

b) be in accordance with written, standardized methodology; and

c) where necessary to safety, include a practical demonstration of the air operator's actual ability to conduct such an operation.

2.2 Demonstrations necessary prior to some specific approvals and approvals

2.2.1 Standard 2.2.1.3 obligates the State of the Operator, prior to certification of the operator, to require sufficient demonstrations by the operator to enable the State to evaluate the adequacy of the operator's organization, method of control and supervision of flight operations, ground handling and maintenance arrangements. These demonstrations should be in addition to the review or inspections of manuals, records, facilities and equipment. Some of the specific approvals and approvals required by Part III, Section II, such as specific approval for low visibility operations, have significant safety implications and should be validated by demonstration before the State authorizes such operations.

2.2.2 While the specific methodology and extent of the required demonstrations and evaluations vary between States, the certification processes of States whose operators have good safety records are generally consistent. In these States, technically qualified inspectors evaluate a representative sample of the actual training, maintenance and operations prior to the issuance of an AOC or additional authorizations to the AOC.

2.3 Recording of certification actions

2.3.1 It is important that the certification, specific approval, approval and acceptance actions of the State are adequately documented. The State should issue a written instrument, such as a letter or formal document, as an official record of the action. These written instruments should be retained as long as the operator continues to exercise the authorizations for which the specific approval, approval or acceptance action was issued. These instruments are unambiguous evidence of the authorities held by the operator and provide proof, in the event that the State and the operator disagree on the operations, that the operator is authorized to conduct.

2.3.2 Some States collect certification records such as inspections, demonstrations, specific approvals, approvals and acceptance instruments into a single file which is retained as long as the operator is active. Other States retain these records in files according to the certification action performed, and revise the file as the specific approvals, approvals or acceptance instruments are updated. Regardless of the method used, these certification records are persuasive evidence that a State is complying with its ICAO obligations regarding operator certification.

2.4 Coordination of operations and airworthiness evaluations

Some of the references to specific approval, approval or acceptance in Part III, Section II, will require an operations evaluation and an airworthiness evaluation. Specific approvals for operations in low visibility, for example, require coordinated prior evaluation by operations and airworthiness specialists. Flight operations specialists should evaluate the operational procedures, training and qualifications. Airworthiness specialists should evaluate the aircraft, equipment reliability and maintenance procedures. These evaluations may be accomplished separately, but should be coordinated to ensure that all aspects necessary for safety have been addressed before any specific approval, approval or acceptance is issued.

2.5 State of the Operator and State of Registry responsibilities

2.5.1 Annex 6, Part III, Section II, places the responsibility for initial certification, issuance of the AOC, and ongoing surveillance of an air operator on the State of the Operator. Annex 6, Part III, also requires the State of the Operator to consider or act in accordance with various specific approvals, approvals and acceptances by the State of Registry. Under these provisions, the State of the Operator should ensure that its actions are consistent with the specific approvals, approvals and acceptances of the State of Registry and that the air operator is in compliance with State of Registry requirements.

2.5.2 It is essential that the State of the Operator be satisfied with the arrangements by which its air operators use aircraft on the register of another State, particularly for maintenance and crew training. The State of the Operator should review such arrangements in coordination with the State of Registry. Where appropriate, an agreement transferring oversight responsibilities from the State of Registry to the State of the Operator, pursuant to Article 83 *bis* to the Convention on International Civil Aviation. should be arranged to preclude any misunderstandings regarding which State is responsible for specific oversight responsibilities.

Note.— Guidance concerning the responsibilities of the State of the Operator and the State of Registry in connection with lease, charter and interchange operations is contained in the Manual of Procedures for Operations Inspection, Certification and Continued Surveillance *(Doc 8335). Guidance concerning the transfer of State of Registry responsibilities to the State of the Operator in accordance with Article 83* bis *is contained in Doc 10059.*

3. AUTHORIZATIONS

An authorization entitles an operator, owner or pilot-in-command to undertake the authorized operations. Authorizations can take the form of specific approvals, approvals or acceptances.

3.1 Specific approval actions

3.1.1 The term “specific approval” indicates a formal action on the part of the State of the Operator which results in an addition to the operations specification.

3.1.2 The following provisions make explicit reference to the need for a specific approval:

a) operational credits for operations with advanced aircraft when used for low visibility operations [Section II, 2.2.8.1.1];

b) low visibility operations [Section II, 2.2.8.4 and 2.2.8.5];

c) electronic flight bags [Section II, 4.17.2]; and

d) AR navigation specifications for PBN operations [Section II, 5.2.4].

3.1.3 An example operations specification template is provided in Appendix 3

3.2 Air operator certificate (AOC)

3.2.1 The AOC required by Annex 6, Part III, Section II, Chapter 2, 2.2.1, is a formal instrument. Section II, Chapter 2, 2.2.1.5, lists the information to be included in the AOC.

3.2.2 In addition to the items in Appendix 3, paragraph 3, operations specifications may include other specific authorizations, such as:

a) take-off and landing operations with exposure time;

b) special approach procedures (e.g. steep gradient approach, instrument landing system precision runway monitor approach, localizer-type directional aid precision runway monitor approach, RNP approach);

c) instrument meteorological conditions operations in Performance Class III; and

d) operations in areas with special procedures (e.g. operations in areas using different altimetry units or altimeter setting procedures).

3.3 Approval actions

3.3.1 The term “approval” indicates a more formal action on the part of the State with respect to a certification matter than does the term “acceptance”. Some States require the Director of the Civil Aviation Authority (CAA) or a designated lower-level CAA official to issue a formal written instrument for every “approval” action taken. Other States allow a variety of documents to be issued as evidence of an approval. The approval document issued and the matter addressed by the approval will depend on the delegated authority of the official. In such States, authority to sign routine approvals, such as operator minimum equipment lists for specific aircraft, is delegated to technical inspectors. More complex or significant approvals are normally issued by higher-level officials.

3.3.2 Provisions that require an approval

The following provisions require or encourage approval by specified States. The approval of the State of the Operator is required in all of the certification actions listed below that are not preceded by one or more asterisks. Certification actions listed below that are preceded by one or more asterisks require approval by the State of Registry (single asterisk or “*”), or by the State of Design (double asterisk or “**”). However, the State of the Operator should take the necessary steps to ensure that operators for which it is responsible comply with any applicable approvals issued by the State of Registry and/or State of Design, in addition to its own requirements.

Note.— Items that require a specific approval are not included here. Refer to 3.1.2 for a list of these provisions.

a) **Configuration deviation list (CDL) (Definitions);

b) **Master minimum equipment list (MMEL) (Definitions);

c) The method for establishing minimum flight altitudes (Section II, 2.2.7.3);

d) The method of determining heliport operating minima (Section II, 2.2.8.1);

e) Fatigue Management (Section II, 2.8);

f) Helicopter-specific minimum equipment list (MEL) (Section II, 4.1.3);

g) Performance-based navigation operations (Section II, 5.2.2 b));

h) *Approved maintenance organization (Section II, 6.1.2);

i) *Helicopter-specific maintenance programme (Section II, 6.3.1);

j) Flight crew training programmes (Section II, 7.3.1);

k) Training in the transport of dangerous goods (Section II, 7.3.1, Note 5);

l) Use of flight simulation training devices (Section II, 7.3.2 a), 7.4.1 and 7.4.3);

m) Method of control and supervision of flight operations (Section II, 2.2.1.3 and 8.1);

n) **Mandatory maintenance tasks and intervals (Section II, 9.3.2); and

o) Cabin attendant training programmes (Section II, 10.3).

3.4 Provisions that require a technical evaluation

Other provisions of Part III, Section II require the State to have made a technical evaluation. These provisions contain the phrases “acceptable to the State”, “satisfactory to the State”, “determined by the State”, “deemed acceptable by the State”, and “prescribed by the State”. While not necessarily requiring an approval by the State, these Standards do require the State to at least accept the matter at issue after it conducts a specific review or evaluation. These provisions are:

a) details of the helicopter-specific checklists (Definition: aircraft operating manual and 4.1.4);

b) details of the aircraft-specific systems (Definition: aircraft operating manual and 4.1.4);

c) mandatory material for the operations manual (2.2.3.2 and Appendix 8);

d) *operator's aircraft-specific maintenance responsibilities (6.1.1);

e) *method of maintenance and release (6.1.2);

f) *maintenance control manual (6.2.1);

g) *mandatory material for the maintenance control manual (6.2.4);

h) *reporting of maintenance experience information (6.5.1);

i) *implementing necessary maintenance corrective actions (6.5.2);

j) *modification and repair requirements (6.6);

k) training facilities (7.3.1);

l) qualifications of instructors (7.3.1);

m) need for recurrent training (7.3.l);

n) use of correspondence courses and written examinations (7.3.1, Note 4);

o) use of flight simulation training devices (7.3.2);

p) flight crew qualification records (7.4.2.4);

q) designated representative of the State of the Operator (7.4.3.1);

r) *flight manual changes (9.1); and

s) minimum number of flight attendants assigned to a specific aircraft (10.1).

3.5. Acceptance actions

3.5.1 Acceptance

3.5.1.1 The actual extent of the State's technical evaluation of the operator's readiness to conduct certain flight operations should be much broader than just those Standards which require or imply approval. During certification, the State should ensure that the operator will be in compliance with all requirements of Part III, Section II prior to conducting international commercial air transport operations.

3.5.1.2 The concept of "acceptance" is used by some States as a formal method of ensuring that all critical aspects of operator certification are reviewed by the State prior to the formal issuance of the AOC. Using this concept, these States exercise their prerogative to have technical inspectors review all operators' policies and procedures impacting operational safety. The actual execution of an instrument to reflect this acceptance (assuming such a document is issued) may be delegated to the technical inspector assigned to the certification.

3.5.1.3 The act of "acceptance" is in addition to the issuance of a specific approval. For example, certain portions of the operations manual may be "accepted" by formal instrument, while other portions such as the aircraft-specific minimum equipment list are "approved" by a separate formal instrument.

3.5.2 Conformance report

Some States use a conformance report to document the acceptances it makes with regard to a particular operator. This is a document submitted by the operator detailing how, with specific references to operations or maintenance manuals, it will comply with all applicable State regulations. This type of document is referenced in Doc 8335. Such a conformance report should be actively used during the certification process and revised as necessary to reflect modifications required by the State

in the operator's policies and procedures. Then a final conformance report is included in the State's certification records, along with other records of certification. The conformance report is an excellent method of demonstrating that the operator was properly certificated with respect to all applicable regulatory requirements.

3.5.3 Operations and maintenance manuals

3.5.3.1 Operations and maintenance manuals, and any subsequent amendments should be submitted to the State (2.2.3.2, 6.1.1, 6.2.4, 6.3.2). The State also establishes minimum contents for these manuals (9.2, 9.3, 9.4 and Appendix 8). The pertinent portions of the operator's manual for evaluation should be identified in the State's technical guidance, e.g. operations policy manual, aircraft operating manual, cabin crew manual, route guide, and training manual. Some States issue a formal instrument accepting each manual and any subsequent amendments.

3.5.3.2 The State's technical evaluation should, in addition to ensuring that all required contents are addressed, consider if the specific policies and procedures would result in the desired outcome. For example, the specifications for the operational flight plan (Appendix 8, 2.1.15) should provide the step-by-step completion guidance necessary for compliance with 2.3 concerning the content and retention of these plans.

3.5.3.3 Proven industry practices, such as an example of an actual completed operational flight plan for reference by the flight crew and dispatchers (although not a Standard), may also be required by a State's technical evaluator during certification. This aspect of the technical evaluation should be conducted by inspectors experienced in operator certification. A major consideration with respect to evaluating for proven industry practices that are aircraft-specific, equipment-specific or have limited applications is the employment of evaluators who are currently qualified in the practice to be evaluated.

4. OTHER APPROVAL OR ACCEPTANCE CONSIDERATIONS

Some States provide for approval or acceptance of certain critical documents, records or procedures specified in Part III, Section II, although the relevant Annex 6 Standards do not require approval or acceptance by the State of the Operator. The following are some examples:

a) method for obtaining aeronautical data (2.1.1);

b) adequacy of the fuel and oil records (2.2.9);

c) adequacy of flight time, flight duty and rest period records (2.8);

d) adequacy of the aircraft maintenance logbook (2.3.1 a), b), and c));

e) adequacy of the load manifest (2.3.1 d), e) and f));

f) adequacy of the operational plan (2.3.1 g));

g) method for obtaining weather data (2.3.5.1 and 2.3.5.2);

h) method of compliance with carry-on baggage stowage (2.7);

i) helicopter performance operating limitations (3.2.4);

j) method of obtaining and applying heliport obstacle data (3.3);

k) adequacy of passenger information cards (4.2.2 d));

l) contents of the journey log-book (9.4); and

m) content of the security training programme (11.2).

5. VALIDATION OF STANDARDS OF OPERATIONS

Standard 2.2.1.4 requires that the validity of an AOC shall depend upon the operator maintaining the original certification standards (2.2.1.3) under the supervision of the State of the Operator. This supervision requires that a system of continued surveillance be established to ensure the required standards of operations are maintained (2.2.1.8). A good starting point in the development of such a system is to require annual or semi-annual inspections, observations and tests to validate the required certification approval and acceptance actions.

6. AMENDMENT OF AIR OPERATOR CERTIFICATES

The certification of the operator is an ongoing process. Few operators will be satisfied over time with the initial authorizations issued with their AOC. Evolving market opportunities will cause the operator to change aircraft models and seek approval for new operational areas requiring other additional capabilities. Additional technical evaluations should be required by the State before issuing the formal written instruments approving any changes to the original AOC and other authorizations. Where possible, each request should be “bridged”, using the original authorization as the foundation to determine the extent of the State’s impending evaluation before issuing the formal instrument.

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ATTACHMENT D. FLIGHT SAFETY DOCUMENTS SYSTEM

Supplementary to Section II, Chapter 1, 1.3.5

1. INTRODUCTION

1.1 The following material provides guidance on the organization and development of an operator's flight safety documents system. It should be understood that the development of a flight safety documents system is a complete process and changes to each document comprising the system may affect the entire system. Guidelines applicable to the development of operational documents have been produced by government and industry sources and are available to operators. Nevertheless, it may be difficult for operators to make the best use of these guidelines, since they are distributed across a number of publications.

1.2 Furthermore, guidelines applicable to operational documents development tend to focus on a single aspect of documents design, for example, formatting and typography. Guidelines rarely cover the entire process of operational documents development. It is important for operational documents to be consistent with each other and consistent with regulations, manufacturer requirements and Human Factors principles. It is also necessary to ensure consistency across departments as well as consistency in application. Hence the emphasis on an integrated approach, based on the notion of the operational documents as a complete system.

1.3 The guidelines in this Attachment address the major aspects of the operator's flight safety documents system development process, with the aim of ensuring compliance with Section II, Chapter 1, 1.3.5. The guidelines are based not only upon scientific research, but also upon current industry best practices, with an emphasis on a high degree of operational relevance.

2. ORGANIZATION

2.1 A flight safety documents system should be organized according to criteria which ensure easy access to information required for flight and ground operations contained in the various operational documents comprising the system and which facilitate management of the distribution and revision of operational documents.

2.2 Information contained in a flight safety documents system should be grouped according to the importance and use of the information, as follows:

a) time-critical information, e.g. information that can jeopardize the safety of the operation if not immediately available;

b) time-sensitive information, e.g. information that can affect the level of safety or delay the operation if not available in a short time period;

c) frequently used information;

d) reference information, e.g. information that is required for the operation but does not fall under b) or c) above; and

e) information that can be grouped based on the phase of operation in which it is used.

2.3 Time-critical information should be placed early and prominently in the flight safety documents system.

2.4 Time-critical information, time-sensitive information, and frequently used information should be placed in cards and quick-reference guides.

3. VALIDATION

The flight safety documents system should be validated before deployment, under realistic conditions. Validation should involve the critical aspects of the information use, in order to verify its effectiveness. Interactions among all groups that can occur during operations should also be included in the validation process.

4. DESIGN

4.1 A flight safety documents system should maintain consistency in terminology and in the use of standard terms for common items and actions.

4.2 Operational documents should include a glossary of terms, acronyms and their standard definition, updated on a regular basis to ensure access to the most recent terminology. All significant terms, acronyms and abbreviations included in the flight documents system should be defined.

4.3 A flight safety documents system should ensure standardization across document types, including writing style, terminology, use of graphics and symbols, and formatting across documents. This includes a consistent location of specific types of information, consistent use of units of measurement and consistent use of codes.

4.4 A flight safety documents system should include a master index to locate, in a timely manner, information included in more than one operational document.

Note.— The master index must be placed in the front of each document and consist of no more than three levels of indexing. Pages containing abnormal and emergency information must be tabbed for direct access.

4.5 A flight safety documents system should comply with the requirements of the operator's quality system, if applicable.

5. DEPLOYMENT

Operators should monitor deployment of the flight safety documents system, to ensure appropriate and realistic use of the documents, based on the characteristics of the operational environment and in a way which is both operationally relevant and beneficial to operational personnel. This monitoring should include a formal feedback system for obtaining input from operational personnel.

6. AMENDMENT

6.1 Operators should develop an information gathering, review, distribution and revision control system to process information and data obtained from all sources relevant to the type of operation conducted, including, but not limited to, the State of the Operator, State of Design, State of Registry, manufacturers and equipment vendors.

Note.— Manufacturers provide information for the operation of specific aircraft that emphasizes the aircraft systems and procedures under conditions that may not fully match the requirements of operators. Operators should ensure that such information meets their specific needs and those of the local authority.

6.2 Operators should develop an information gathering, review and distribution system to process information resulting from changes that originate within the operator, including:

a) changes resulting from the installation of new equipment;

b) changes in response to operating experience;

c) changes in the operator's policies and procedures;

d) changes in the operator certificate; and

e) changes for purposes of maintaining cross-fleet standardization.

Note.— Operators should ensure that crew coordination philosophy, policies and procedures are specific to their operation.

6.3 A flight safety documents system should be reviewed:

a) on a regular basis (at least once a year);

b) after major events (mergers, acquisitions, rapid growth, downsizing, etc.);

c) after technology changes (introduction of new equipment); and

d) after changes in safety regulations.

6.4 Operators should develop methods of communicating new information. The specific methods should be responsive to the degree of communication urgency.

Note.— As frequent changes diminish the importance of new or modified procedures, it is desirable to minimize changes to the flight safety documents system.

6.5 New information should be reviewed and validated considering its effects on the entire flight safety documents system.

6.6 The method of communicating new information should be complemented by a tracking system to ensure currency by operational personnel. The tracking system should include a procedure to verify that operational personnel have the most recent updates.

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ATTACHMENT E. ADDITIONAL GUIDANCE FOR OPERATIONS OF HELICOPTERS IN PERFORMANCE CLASS 3 IN INSTRUMENT METEOROLOGICAL CONDITIONS (IMC)

Supplementary to Section II, Chapter 3, 3.4 and Appendix 2

1. PURPOSE AND SCOPE

The purpose of this attachment is to give additional guidance on the airworthiness and operational requirements described in Section II, Chapter 3, 3.4 and Appendix 2, 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 in Chapter 3, 3.4.1 and Appendix 2, 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 State of the Operator 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 utilization 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 Appendix 2, paragraph 1);

b) specific and appropriate training and checking procedures as described in Appendix 2, paragraph 7;

c) a maintenance programme which is extended to address the equipment and systems referred to in Appendix 2, 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 Appendix 2, 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 control manual should include a statement of certification of the additional equipment required, and of the maintenance and reliability programme for such equipment, including the engine.

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ATTACHMENT F. GUIDE TO CURRENT FLIGHT RECORDER PROVISIONS

Supplementary to Section II, Chapter 4, 4.3 and Section III, Chapter 4, 4.7

1. INTRODUCTION

Since 1973, and the inclusion in Annex 6 of SARPs for the carriage of flight recorders, new and revised requirements were introduced concerning flight recorders. These amendments include an update of the provisions pertaining to flight recorders, recording of digital communications, FDR requirements for new aircraft, revised parameter listings and two-hour duration CVRs. Through the years, the applicability date and the carriage of flight recorders to be installed, as defined by the SARPs, are quite complex.

The tables below summarize the flight recorders carriage requirements for helicopters.

Table F-1. SARPs for the recording of flight parameters in Section II

<table>
<tr><td rowspan="2">Date</td><td colspan="4">Maximum certificated take-off mass
(MCTOM)</td></tr>
<tr><td>Seating configuration of more than 19 passengers or
over 7 000 kg</td><td>Over
3 175 kg</td><td>Over 2 250 kg up to
3 175 kg</td><td>Less than 3 175 kg</td></tr>
<tr><td></td><td>All helicopters
first certificate of airworthiness</td><td>All helicopters
first certificate of airworthiness</td><td>All turbine helicopters
new type certificate</td><td>All helicopters
first certificate of airworthiness</td></tr>
<tr><td>1989
⇒</td><td>4.3.1.1.2</td><td>4.3.1.1.3</td><td rowspan="2"></td><td rowspan="2"></td></tr>
<tr><td>2016
⇒</td><td colspan="2">4.3.1.1.1</td></tr>
<tr><td>2018
⇒</td><td colspan="2"></td><td>4.3.1.1.4</td><td>4.3.1.1.5</td></tr>
</table>

Table F-2. SARPs for the recording of flight parameters in Section III

Date	Maximum certificated take-off mass (MCTOM)	
	Seating configuration of more than 19 passengers or over 7 000 kg	Over 3 175 kg
	All helicopters first certificate of airworthiness	All helicopters first certificate of airworthiness
1989 ⇒	4.7.1.1.2	4.7.1.1.3
2016 ⇒	4.7.1.1.1	4.7.1.1.1

Table F-3. CVR/CARS installation SARPs in Section II and Section III

Date	Maximum certificated take-off mass (MCTOM)	
	Over 7 000 kg	Over 3 175 kg
	All helicopters	All helicopters first certificate of airworthiness
1987 ⇒	4.3.2.1.1 or 4.7.2.1.1	4.3.2.1.2 or 4.7.2.1.2

Table F-4. Data link communications (DLC) recording installation clarification

Rows	Date individual certificate of airworthiness was first issued	Date aircraft type certificate issued or modification for DLC equipment first approved	Date of activation for use of DLC equipment	DLC recording required	SARP Reference
1	On or after 1 January 2016	On or after 1 January 2016	On or after 1 January 2016	Yes	4.7.3.1.1
2	On or after 1 January 2016	Before 1 January 2016	On or after 1 January 2016	Yes	4.7.3.1.1
3	Before 1 January 2016	On or after 1 January 2016	On or after 1 January 2016	Yes	4.7.3.1.2
4	Before	Before	Before	No	4.7.3.1.2

Rows	Date individual certificate of airworthiness was first issued	Date aircraft type certificate issued or modification for DLC equipment first approved	Date of activation for use of DLC equipment	DLC recording required	SARP Reference
	1 January 2016	1 January 2016	1 January 2016		
5	Before 1 January 2016	Before 1 January 2016	On or after 1 January 2016	No[1]	4.7.3.1.2 *4.7.3.1.3*

[1]Not required but recommended.

2. TABLE HEADINGS

2.1 *Date individual certificate of airworthiness* was first issued is self-explanatory.

2.2 *Date aircraft type certificate issued or modification for DLC equipment first approved* is the date that allows the installation of DLC equipment on the aircraft and refers to the airworthiness approval of the installation of aircraft components such as the structural and wiring provisions with which the DLC equipment needs to be compliant. These airworthiness approvals are usually in a form of a type certificate, a supplementary type certificate or an amended type certificate.

2.2.1 It is not uncommon for original customers of a helicopter that have airworthiness approvals related to DLC capability to choose not to install the DLC equipment or choose not to have it activated even if the helicopter is prepared for it.

2.3 *Date of activation for use of DLC equipment* refers to the date that a DLC application referred to in 5.1.2 of Appendix 4 was first activated for use.

2.3.1 Datalink communication (DLC) equipment as used in these provisions, refer to the physical unit(s) (e.g. box(es)) that was approved to a minimum performance standard issued by a certification authority (e.g. TSO or ETSO).

2.3.2 The activation of DLC functions refer to approved software activation of DLC functions or software updates.

2.4 *DLC recording required* refers to the requirement to record DLC message in accordance with provisions 4.3.3.1.1, 4.3.3.1.2 and 4.3.3.1.3 in Section II and 4.7.3.1.1, 4.7.3.1.2 and 4.7.3.1.3 in Section III.

3. GENERAL

3.1 It is the date on which the CVR capabilities of the aircraft were approved that determines the DLC recording requirement. The date in which the DLC equipment was approved to a minimum performance standard is not relevant for CVR recording requirement purposes.

3.2 For the DLC equipment to be compliant with an airworthiness approval, it needs to be able to use, without modification, the installed helicopter components that are necessary to provide the DLC function such as the:

a) datalink router (e.g. hosted in the communications management unit);

b) radios (e.g. VHF, HF datalink, Satcom) and related antennas.

3.3 Approved software updates to installed equipment or software activation of functions normally do not alter the DLC equipment compliance with the rest of the helicopter systems.

4. EXAMPLES

4.1 For rows 1 and 2:

– The recording requirement is driven by Standards 4.3.3.1.1 and 4.7.3.1.1 which is based on when the individual certificate of airworthiness was first issued. Any subsequent airworthiness modifications related to DLC capability do not exempt the helicopter from the requirement to record DLC messages.

4.2 For rows 3 to 5 — General:

– The recording requirement is driven by Standards 4.3.3.1.2 and 4.7.3.1.2 and is based on whether or not the helicopter has an airworthiness approval for DLC capabilities and the date of its issue.

– Since there was no requirement to record DLC messages prior to 1 January 2016, airworthiness approvals related to DLC capability issued before that date did not necessarily include this function.

4.3 For row 3:

– The recording requirement applies regardless of when the certificate of airworthiness was issued, because an airworthiness approval related to DLC capability was issued on or after 1 January 2016. The date of installation of the equipment would typically be after the airworthiness approval.

4.4 For row 4:

– The recording requirement does not apply because the helicopter's certificate of airworthiness and an airworthiness approval related to DLC capability was issued before 1 January 2016. The date of installation of DLC equipment is not a factor for DLC message recording requirements as long as the equipment is compliant with that airworthiness approval.

4.5 For row 5:

– The recording requirement does not apply because the helicopter's certificate of airworthiness and an airworthiness approval related to DLC capability was issued before 1 January 2016. The date of installation of DLC equipment is not a factor for DLC message recording requirements as long as the equipment is compliant with that airworthiness approval.

– Notwithstanding the above, if the activation for use of the DLC equipment is on or after 1 January 2016, DLC messages should be recorded in accordance with Recommendations 4.3.3.1.3 and 4.7.3.1.3.

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ATTACHMENT G. DANGEROUS GOODS

(Supplementary to Section II, Chapter 12)

1. PURPOSE AND SCOPE

The material in this attachment provides guidance regarding the carriage of dangerous goods as cargo. Section II, Chapter 12 includes dangerous goods operational requirements that apply to all operators. Operators that are approved to transport dangerous goods as cargo need to meet additional requirements. In addition to the operational requirements contained in Annex 6, there are other requirements in Annex 18 and in the Technical Instructions that also need to be complied with.

2. DEFINITIONS

Where the term below is used in this attachment, it has the following meaning:

Cargo. Any property carried on an aircraft other than mail and accompanied or mishandled baggage.

Note 1.— This definition differs from the definition of "cargo" given in Annex 9 — Facilitation.

Note 2.— 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).

3. STATES

3.1 The State of the Operator should indicate in the operations specification if the operator has been issued a specific approval to transport dangerous goods as cargo. Any limitations should be included.

3.2 A specific approval may be granted for the transport of specific types of dangerous goods only (e.g. dry ice, biological substance, Category B and dangerous goods in excepted quantities) or COMAT.

3.3 The *Supplement to the Technical Instructions for the Safe Transport of Dangerous Goods by Air* (Doc 9284SU) contains guidance on a State's responsibilities with respect to operators. This includes additional information to Part 7 of the Technical Instructions on storage and loading, provision of information, inspections, enforcement and Annex 6 information relevant to the State's responsibilities for dangerous goods.

3.4 The carriage of dangerous goods other than as cargo (e.g. medical flights, search and rescue) is addressed in Part 1;1 of the Technical Instructions. The exceptions for the carriage of dangerous goods that are either equipment or for use on board the aircraft during flight are detailed in Part 1;2.2.1 of the Technical Instructions.

4. OPERATOR

4.1 The operator's training programme should cover, as a minimum, the aspects of the transport of dangerous goods, listed in the Technical Instructions, Part 1;4. Instruction on Dangerous Goods. Recurrent training must be provided within 24 months of previous training, except as otherwise provided by the Technical Instructions.

4.2 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.

4.3 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.

4.4 Operators should meet and maintain requirements established by the States in which operations are conducted in accordance with Section III, Chapter 2, 2.2.2.3 of this Annex.

4.5 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.

4.6 Attachment I to Part S-7;8 of the *Supplement to the Technical Instructions for the Safe Transport of Dangerous Goods by Air* (Doc 9284SU) 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.

4.7 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.

— END —

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