

International Standards
and Recommended Practices



Annex 6
to the Convention on
International Civil Aviation

Operation of Aircraft

Part II
International General
Aviation — Aeroplanes

This edition incorporates all amendments
adopted by the Council prior to 4 March 2014
and supersedes, on 13 November 2014, all previous
editions of Part II of Annex 6.

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

Eighth Edition
July 2014

International Civil Aviation Organization



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AMENDMENTS

Amendments are announced in the supplements to the *Publications 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.

RECORD OF AMENDMENTS AND CORRIGENDA

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ABBREVIATIONS AND SYMBOLS

(used in this Annex)

Abbreviations

AC	Alternating current
ACAS	Airborne collision avoidance system
ADREP	Accident/incident reporting
ADRS	Aircraft data recording system
ADS	Automatic dependent surveillance
AFCS	Automatic flight control system
AIR	Airborne image recorder
AIRS	Airborne image recording system
AOC	Air operator certificate
APU	Auxiliary power unit
ARINC	Aeronautical Radio, Incorporated
ASE	Altimetry system error
ATC	Air traffic control
ATM	Air traffic management
ATN	Aeronautical telecommunication network
ATS	Air traffic services
CARS	Cockpit audio recording system
CAT I	Category I
CAT II	Category II
CAT III	Category III
CAT IIIA	Category IIIA
CAT IIIB	Category IIIB
CAT IIIC	Category IIIC
CFIT	Controlled flight into terrain
CG	Centre of gravity
cm	Centimetre
CPDLC	Controller-pilot data link communications
CVR	Cockpit voice recorder
CVS	Combined vision system
DA	Decision altitude
DA/H	Decision altitude/height
DC	Direct current
D-FIS	Data link-flight information services
DH	Decision height
DLR	Data link recorder
DLRS	Data link recording system
DME	Distance measuring equipment
DSTRK	Desired track
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
FDR	Flight data recorder
FL	Flight level
FM	Frequency modulation
ft	Foot
ft/min	Feet per minute
g	Normal acceleration
GBAS	Ground-based augmentation system
GCAS	Ground collision avoidance system
GLS	GBAS landing system
GNSS	Global navigation satellite system
GPS	Global positioning system
GPWS	Ground proximity warning system
hPa	Hectopascal
HUD	Head-up display
IAOPA	International Council of Aircraft Owner and Pilot Associations
IBAC	International Business Aviation Council
IFR	Instrument flight rules
ILS	Instrument landing system
IMC	Instrument meteorological conditions
in-Hg	Inch of mercury
INS	Inertial navigation system
ISA	International standard atmosphere
kg	Kilogram
km	Kilometre
km/h	Kilometres per hour
kt	Knot
lbf	Pound-force
LED	Light emitting diode
m	Metre
mb	Millibar
m/s	Metres per second
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

MNPS	Minimum navigation performance specification
MOPS	Minimum operational performance specification
NAV	Navigation
NM	Nautical mile
NVIS	Night vision imaging systems
N ₁	Low pressure compressor speed (two-stage compressor); fan speed (three-stage compressor)
N ₂	High pressure compressor speed (two-stage compressor); intermediate pressure compressor (three-stage compressor)
N ₃	High pressure compressor speed (three-stage compressor)
OCA	Obstacle clearance altitude
OCA/H	Obstacle clearance altitude/height
OCH	Obstacle clearance height
PANS	Procedures for Air Navigation Services
PBN	Performance-based navigation
RCP	Required communication performance
RNAV	Area navigation
RNP	Required navigation performance
RNPSOR	Required navigation performance and special operational requirements
RTCA	Radio Technical Commission for Aeronautics
RVR	Runway visual range
RVSM	Reduced vertical separation minima
SBAS	Satellite-based augmentation system
SI	International System of Units
SOP	Standard operating procedure
SVS	Synthetic vision system
TAWS	Terrain awareness system
TCAS	Traffic alert and collision avoidance system
TLA	Thrust lever angle
TLS	Target level of safety
TVE	Total vertical error
UTC	Coordinated universal time
V _D	Design diving speed
V _{S0}	Stalling speed or the minimum steady flight speed in the landing configuration
VFR	Visual flight rules
VMC	Visual meteorological conditions
VOR	VHF omnidirectional radio range
VSM	Vertical separation minima
WXR	Weather radar

Symbols

°C	Degrees Celsius
%	Per cent

PUBLICATIONS
(referred to in this Annex)

ICAO Publications

Conventions 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 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 III — International Operations — Helicopters

Annex 8 — Airworthiness of Aircraft

Annex 10 — Aeronautical Telecommunications

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

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)

OPS — Aircraft Operations (Doc 8168)

Volume I — *Flight Procedures*

Volume II — *Construction of Visual and Instrument Flight Procedures*

Regional Supplementary Procedures (Doc 7030)

Manuals

Airport Services Manual (Doc 9137)

Part 1 — *Rescue and Fire Fighting*

Part 8 — *Airport Operational Services*

Airworthiness Manual (Doc 9760)

Fatigue Management Manual for General Aviation (Doc 10033)

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

Human Factors Training Manual (Doc 9683)

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

Manual of All-Weather Operations (Doc 9365)

Manual of Civil Aviation Medicine (Doc 8984)

Manual on Electronic Flight Bags (Doc 10020)

Manual on Implementation of a 300 m (1 000 ft) Vertical Separation Minimum Between FL 290 and FL 410 Inclusive (Doc 9574)

Manual on Required Communication Performance (RCP) (Doc 9869)

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

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

Safety Management Manual (SMM) (Doc 9859)

Other publications

Aeronautical Radio, Incorporated (ARINC), ARINC-647A

European Organisation for Civil Aviation Equipment (EUROCAE) Documents ED-55, ED-56A, ED-76, ED-77, E-112, E-112A, ED-155

International Maritime Organization (IMO), *International Regulations for Preventing Collisions at Sea*

Radio Technical Commission for Aeronautics (RTCA), DO-200A and DO-201A

United States Federal Aviation Administration, FAA Report No. DOT/FAA/AR-99-63



ANNEX 6 — PART II

INTERNATIONAL GENERAL AVIATION — AEROPLANES

FOREWORD

Historical background

Standards and Recommended Practices for the Operation of Aircraft — International General Aviation were first adopted by the Council on 2 December 1968 pursuant to the provisions of Article 37 of the Convention on International Civil Aviation (Chicago, 1944) and designated as Annex 6, Part II, to the Convention. They became effective on 2 April 1969 and applicable on 18 September 1969.

Annex 6, Part II, was developed in the following manner: the Fifteenth Session of the Assembly, Montreal, June–July 1965, adopted Resolution A15-15: “Consideration of the needs of international general aviation in relation to the scope of ICAO technical activities”. Subsequently, the Fourth Air Navigation Conference (Montreal, November–December 1965) recommended a series of factors which it considered should be taken into account in extending the scope of Annex 6 to meet the needs of general aviation in accordance with the directives of Assembly Resolution A15-15.

The Fourth Air Navigation Conference recommended that the International Standards and Recommended Practices to be developed for International General Aviation Operations exclude, for the present, aerial work operations. It was however clearly the view of the conference that the Annex should be framed in such a manner as to facilitate its extension to cover aerial work operations at a later date, should such extension prove desirable.

Based on the above considerations, draft International Standards and Recommended Practices for the Operation of International General Aviation Aircraft were developed by the Air Navigation Commission and, after amendment following the usual consultation with the Member States of the Organization, were adopted by the Council so as to become, together with the Foreword approved by the Council, the text of this Annex. In developing this material in 1965 the Air Navigation Commission was guided by the following philosophies:

Presentation and conformity with Annex 6, Part I. The Annex should be, as nearly as practicable, equivalent in scope and conform as closely as possible to Annex 6 (now Annex 6, Part I).

Applicability. Although the definition of general aviation originally used in this Annex encompassed aerial work operations, these were specifically excluded from the provisions of this Annex by Chapter 1.2 — Applicability.

Level of safety. The Annex should ensure an acceptable level of safety to passengers and third parties (third parties meaning persons on the ground and persons in the air in other aircraft). Also, as some international general aviation operations (typically under 5 700 kg) would be performed by crews less experienced and less skilled, with less reliable equipment, to less rigorous standards and with greater freedom of action than in commercial air transport operations, it was therefore accepted that the passenger in international general aviation aircraft would not necessarily enjoy the same level of safety as the fare-paying passenger in commercial air transport. However, it was recognized that in ensuring an acceptable degree of safety for third parties, an acceptable level of safety for flight crews and passengers would be achieved.

Freedom of action. The maximum freedom of action consistent with maintaining an acceptable level of safety should be granted to international general aviation.

Responsibility. The responsibility that devolves upon the operator in Annex 6, Part I, should, in Part II of the Annex, fall upon the owner and pilot-in-command. Precedent for this course of action exists in Annex 2.

Consequent to the adoption of Annex 6, Part III, *International Operations — Helicopters*, an amendment to the title was introduced to indicate that Annex 6, Part II was applicable only to aeroplanes.

In 1986 the Air Navigation Commission commenced a review of Annex 6, Part II, and concluded that the definition of general aviation should be revised to exclude aerial work thus recognizing that aerial work was a distinct aspect of civil aviation and recognizing the exclusion of aerial work from the applicability of Annex 6, Part II. As with the Fourth Air Navigation Conference in 1965, the Air Navigation Commission was not aware of any degree of international aerial work operations which would necessitate the development of International Standards and Recommended Practices. The revised definitions for general aviation and aerial work and the revised applicability chapter were submitted to States in the usual manner and approved by the Council in March 1990.

In 2005 and 2006, the Air Navigation Commission completed a thorough review of Annex 6, Part II, with the intent of modernizing the provisions to reflect the significant changes in general aviation since the Annex was initially developed. The Commission considered new general aviation dynamics reflected by the increasing use of large, technically advanced turbine-engined aeroplanes in international general aviation operations. The Commission endorsed the philosophy established during initial development of the Annex that the owner and pilot-in-command must assume responsibility for the safety of operations in non-commercial operations where travel is not open to the general public. In such operations the Standards and Recommended Practices need not be as prescriptive as those in Annex 6, Part I, due to the inherent self-responsibility of the owner and pilot-in-command. The State does not have an equivalent “duty of care” to protect the occupants as it does for fare-paying customers in commercial operations. The Commission endorsed the level-of-safety philosophy that the Standards and Recommended Practices of Annex 6, Part II, must protect the interests of third parties. It was therefore agreed that the basic provisions of Annex 6, Part II, should remain applicable to all general aviation operations, but updated to reflect current technologies and operational procedures and the use of safety management systems where appropriate.

The Commission also considered that additional provisions should be added for the larger, more complex operations, and all general aviation operations using turbojet aeroplanes. In this regard the Commission decided to add an additional section applicable to this sector of general aviation.

In large and turbojet operations, it was concluded that their complexity warrants provisions governing an operator, whereas in the initial development of Annex 6, Part II, the provisions applied to the owner and pilot-in-command. A review of the safety record of this general aviation sector showed that the principles of individual operator responsibility and industry codes of practice have been effective given that the safety record is excellent and essentially equivalent to large, scheduled air transport governed by Annex 6, Part I.

The Commission also expressed the need for a more modern approach to rulemaking through application of “performance-based” Standards. Such an approach was being considered for other Annexes, including Annex 6, Part III. Performance-based Standards are facilitated through use of industry “codes of practice”, and the Commission endorsed reference to acceptable codes in the development of an updated Annex 6, Part II.

Table A shows the origin of 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 of Annex 6, Part II, are applicable to international general aviation operations with aeroplanes.

The Standards and Recommended Practices represent minimum provisions and, together with those of Annex 6 — *Operation of Aircraft*, Part I — *International Commercial Air Transport — Aeroplanes*, now cover the operation of all aeroplanes in international civil aviation, except in aerial work operations.

It will be noted that the Standards and Recommended Practices contained in Annex 6, Part II, when applied to the operation of large aeroplanes, are less stringent than those in Annex 6, Part I, applicable to the same or similar aeroplanes when used in commercial air transport operations. Nevertheless, it is considered that, in conjunction with existing provisions in Annexes 1 and 8, Annex 6, Part II, ensures an adequate level of safety for the operations envisaged for the large aeroplanes in question. In this connection attention is drawn to the point that the entire performance Standards of Annex 8 are applicable to all aeroplanes of over 5 700 kg mass intended for the carriage of passengers or cargo or mail for international air navigation, of which the prototype was submitted for certification on or after 13 December 1964. Moreover, by virtue of Annex 1 the pilot of an aircraft certificated for operation with a minimum crew of at least two pilots must hold a type rating for that aircraft type.

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.

The 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.

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 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 incorporate, by reference, other specifications having the status of Recommended Practices. In such cases, 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.

Table A. Amendments to Annex 6, Part II

Amendment	Source(s)	Subject(s)	Adopted Effective Applicable
1st Edition	Fifteenth Session of the Assembly (Resolution A15-15) and Fourth Air Navigation Conference		2 December 1968 2 April 1969 18 September 1969
1	Sixth Air Navigation Conference	a) The requirement for additional instruments in aeroplanes operated as controlled VFR flights in the en-route phase; and b) the permitting of aeroplanes, when unable to navigate by visual references to landmarks, to be navigated by equipment other than radio navigation equipment, e.g. solely by self-contained navigation means, provided that certain equipment capabilities are met, thus eliminating any requirement for the carriage of radio navigation equipment.	1 June 1970 1 October 1970 4 February 1971
2 (2nd Edition)	Special Meeting on Aircraft Noise in the Vicinity of Aerodromes	The inclusion of a specification for aeroplanes to be operated within the weight limitations imposed by the applicable noise certification Standards, except in prescribed circumstances, and to carry a document attesting noise certification.	2 April 1971 2 August 1971 6 January 1972
3	Seventh Air Navigation Conference	The inclusion of a Recommended Practice covering the design, carriage and installation of emergency location beacons — aircraft, in such aeroplanes and on such flights as may be determined by the appropriate authority.	29 May 1973 1 October 1973 23 May 1974
4	Revision of Annex 12, the Air Navigation Commission's study concerning interception of civil aircraft and the Council action in pursuance of Assembly Resolution A18-16	a) Provisions for the marking of break-in points on aircraft; b) provisions for reducing the risk for intercepted aircraft; c) the revision of the Introductory Note to Chapter 3 of the Annex. The revision points to a practical method for States to discharge their functions in the cases of lease, charter and interchange of aircraft in international operations.	4 February 1975 4 June 1975 9 October 1975
5	Studies by the Air Navigation Commission, Amendment 60 to Annex 3 and Amendment 30 to Annex 14	Requirements for the provision and use of flight crew safety harnesses; amplification of specifications for the type of timepiece required for operations in accordance with the instrument flight rules and controlled VFR flights; and revision of the definitions of Aerodrome and Meteorological information.	7 April 1976 7 August 1976 30 December 1976
6	Asia/Pacific (ASIA/PAC) Regional Air Navigation Meeting	The requirement for the carriage of survival radio equipment over those areas in which search and rescue would be especially difficult to be determined by States rather than Regional Air Navigation Agreement.	16 June 1976 16 October 1976 6 October 1977
7	Air Navigation Commission study	Recommendation for the fitting of ground proximity warning systems to certain aeroplanes.	15 December 1977 15 April 1978 10 August 1978
8	Air Navigation Commission study	Introduction of requirements for navigation equipment to meet minimum navigation performance specifications (MNPS).	2 April 1980 2 August 1980 27 November 1980

<i>Amendment</i>	<i>Source(s)</i>	<i>Subject(s)</i>	<i>Adopted Effective Applicable</i>
9	Air Navigation Commission study	Revision of the provisions relating to exterior lights to align with new provisions in Annexes 2 and 8.	22 March 1982 22 July 1982 25 November 1982
10 (3rd Edition)	Seventh meeting of the Obstacle Clearance Panel, Aerodromes, Air Routes and Ground Aids (AGA) Divisional Meeting (1981), amendments consequential to adoption of Annexes 5 and 18	Introduced provisions related to development and use of instrument approach procedures, authority and competence to taxi aeroplanes. Changes to the requirements for the carriage of dangerous goods as a result of adoption by the Council of Annex 18. Units of measurement were brought in line with the provisions of Annex 5 and the <i>Note</i> in Chapter 3 concerning lease, charter and interchange was updated. The term “aerodrome operating minima” was introduced in lieu of “aerodrome meteorological minima”, and definitions of “decision altitude/height” and “minimum descent altitude/height” were entered in Chapter 1.	20 May 1983 20 September 1983 24 November 1983
11	Accident Prevention and Investigation Divisional Meeting, AIG (1979)	Introduction of provisions relating to flight recorders. Introduction of related guidance material in an attachment.	8 March 1985 29 July 1985 21 November 1985
12	Air Navigation Commission	Carriage of information on board aircraft; communication equipment on 121.5 MHz.	14 March 1986 27 July 1986 20 November 1986
13	Seventh meeting of the Obstacle Clearance Panel, Air Navigation Commission studies	Supply and use of oxygen and pressurization failure warning; refuelling with passengers on board; provision of climb performance data with all engines operating.	14 March 1986 27 July 1986 20 November 1986
14 (4th Edition)	Air Navigation Commission review of the Annex, Stage I, Third meeting of the Visual Flight Rules Operations Panel, Air Navigation Commission study	<ul style="list-style-type: none"> a) Revision of the definitions of aerial work and general aviation. Revision of the definition of alternate aerodrome to introduce take-off, en-route and destination alternate aerodromes. Introduction of a new definition for a commercial air transport operation and the definitions for flight plan and flight recorder; b) deletion of the reference to aerial work from the applicability; c) alignment with Annex 6, Part I, particularly with respect to flight recorder records subsequent to accidents or incidents and the requirement for a Mach number indicator; d) elimination of the term “controlled VFR flight”; e) introduction of guidance material concerning flight data recording of important operational information in aeroplanes with electronic displays. 	19 March 1990 30 July 1990 15 November 1990
15	Fifth meeting of the Operations Panel, Seventh and Eighth meetings of the Review of the General Concept of Separation Panel, Accident Investigation Divisional Meeting (AIG/1992), Air Navigation Commission studies	<ul style="list-style-type: none"> a) Revision of definitions of aerodrome 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 the definition for the classification of instrument approach and landing operations; d) revision of the requirements concerning the use of engraving metal foil flight data recorders; 	21 March 1994 25 July 1994 10 November 1994

Amendment	Source(s)	Subject(s)	Adopted Effective Applicable
		<ul style="list-style-type: none"> e) introduction of carriage requirements for emergency locator transmitters (ELTs) to replace provisions regarding survival radio equipment and emergency location beacon; f) 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 area(s) and provisions to permit the uniform implementation of 300 m (1 000 ft) VSM above FL 290. 	
16 (5th Edition)	Air Navigation Commission studies, Fourteenth meeting of the Dangerous Goods Panel, editorial amendment, text alignment with Annex 6, Part I and/or Part III, consequential amendment	<ul style="list-style-type: none"> a) Introduction of revised definitions; b) inclusion of references to Article 35 of the Convention; c) revision of the provisions concerning operating facilities, briefing, aeroplane airworthiness and safety precautions, destination alternate aerodromes, limitations imposed by weather conditions, use of oxygen and safety harness; d) new provisions concerning all aeroplanes on all flights, all aeroplanes operated as VFR flights and ground proximity warning systems (GPWS); e) revision of the provisions concerning aeroplanes operated in accordance with the instrument flight rules (IFR); f) revision of the provisions concerning the composition of the flight crew; and g) revision of the provisions concerning the carriage and use of oxygen. 	10 March 1995 24 July 1995 9 November 1995
17	Fourth meeting of the Secondary Surveillance Radar Improvements and Collision Avoidance Systems Panel (SICASP/4)	Requirement for aeroplanes to be equipped with pressure-altitude reporting transponders.	19 February 1996 15 July 1996 7 November 1996
18 (6th 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	<ul style="list-style-type: none"> a) Introduction of new and revised definitions for psychoactive substances and required navigation performance; b) revision of the notes concerning lease and interchange; c) introduction of a note concerning use of psychoactive substances; and d) new and revised provisions concerning ground proximity warning systems, pressure-altitude reporting transponders and flight recorders. 	20 March 1998 20 July 1998 5 November 1998
19	Second meeting of the Flight Recorder Panel, Air Navigation Commission studies	<ul style="list-style-type: none"> a) Revised definitions; and b) new provisions concerning the mandatory carriage of ELTs operating on 406 MHz and 121.5 MHz, the addition of a predictive terrain hazard warning function to the ground proximity warning system (GPWS), 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

<i>Amendment</i>	<i>Source(s)</i>	<i>Subject(s)</i>	<i>Adopted Effective Applicable</i>
20	Air Navigation Commission studies	a) Revised definitions; and b) revision of the duties of the pilot-in-command and the introduction of criteria for instrument approach operations.	15 March 2000 17 July 2000 2 November 2000
21	Second meeting of the Flight Recorder Panel, Third meeting of the Global Navigation Satellite System Panel, Fifth meeting of the Continuing Airworthiness Panel	a) Update of the provisions pertaining to 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; and d) new definitions and update of provisions pertaining to maintenance-related requirements.	9 March 2001 16 July 2001 1 November 2001
22	Air Navigation Commission studies	Revised requirements for the ground proximity warning system (GPWS) and forward-looking terrain avoidance function.	15 March 2002 15 July 2002 28 November 2002
23	Separation and Airspace Safety Panel	Authorization by the State of Registry for operations in RNP airspace.	13 March 2003 14 July 2003 27 November 2003
24	Separation and Airspace Safety Panel and Air Navigation Commission studies	a) New definitions and provisions regarding height-keeping performance and height-monitoring requirements associated with reduced vertical separation minimum (RVSM) operations; and b) new requirements for the carriage of airborne collision avoidance systems (ACAS II) in general aviation aeroplanes, and associated training requirements for pilots.	28 February 2005 11 July 2005 24 November 2005
25	Fourteenth meeting of the Obstacle Clearance Panel (OCP/14)	Pilot awareness of operational requirements determined by procedure design.	6 March 2006 — —
26	First meeting of the Operational Data Link Panel (OPLINKP/1) and Air Navigation Commission study	a) Amendments to Standards to facilitate implementation of the available technology in relation to the use of automatic dependent surveillance — contract (ADS-C) and to the introduction of required communication performance (RCP) in the provision of air traffic services (ATS); and b) mandatory carriage requirements of emergency locator transmitters (ELTs) as of 1 July 2008.	14 March 2007 16 July 2007 22 November 2007 1 July 2008
27 (7th Edition)	Secretariat with the assistance of IBAC and IAOPA; Secretariat with the assistance of the Required Navigation Performance and Special Operational Requirements (RNPSOR) Study Group	a) Introduces provisions reflecting current practices in international general aviation as well changes to the basic structure of the Annex; and b) amendments to definitions and Standards to align required navigation performance (RNP) and area navigation (RNAV) terminology with the performance-based navigation (PBN) concept.	7 March 2008 20 July 2008 18 November 2010

<i>Amendment</i>	<i>Source(s)</i>	<i>Subject(s)</i>	<i>Adopted Effective Applicable</i>
28	Seventh meeting of the Operations Panel (OPSP/7)	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; and b) new Recommendation 3.4.4.4 to introduce provisions for climbs and descents to reduce unnecessary ACAS II resolution advisories.	2 March 2009 20 July 2009 18 November 2010
29	Secretariat, with the assistance of the Separation and Airspace Safety Panel (SASP); 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) Amendment to the provisions concerning reduced vertical separation minimum (RVSM) long-term monitoring requirements; b) new provisions for head-up displays (HUD)/enhanced vision systems (EVS); c) amendment to provisions to provide consistency in propulsion terminology; and d) new and updated provisions regarding flight recorders.	26 February 2010 12 July 2010 18 November 2010
30	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
31	Secretariat, with the assistance of the third meeting of the Flight Recorder Panel Working Group of the Whole (FLIRECP/WP/ WHL/3)	Amendment concerning carriage requirements for flight recorders.	7 March 2012 16 July 2012 15 November 2012
32-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

<i>Amendment</i>	<i>Source(s)</i>	<i>Subject(s)</i>	<i>Adopted Effective Applicable</i>
32-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
33 (8th edition)	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: <ul style="list-style-type: none"> a) procedure design criteria and charting requirements to support PBN approach and departure operations; b) harmonization of provisions concerning EFBs, HUDs and vision systems, and fuel use. Introduction of a reference to general aviation guidance for fatigue management programmes; c) flight recorder requirements to: reference updated EUROCAE Minimum Operational Performance Specifications (MOPS); include the use of Class C lightweight airborne image recording systems (AIRS); include a seating configuration limitation for the carriage of lightweight flight recorders in small aeroplanes; 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

ANNEX 6 — PART II

SECTION 1

GENERAL



INTERNATIONAL STANDARDS AND RECOMMENDED PRACTICES

CHAPTER 1.1 DEFINITIONS

When the following terms are used in the Standards and Recommended Practices for the operation of aeroplanes in international general aviation, they have the following meanings:

Acts of unlawful interference. These are acts or attempted acts such as to jeopardize the safety of civil aviation and air transport, i.e.:

- unlawful seizure of aircraft in flight,
- unlawful seizure of aircraft on the ground,
- hostage-taking on board an aircraft or on aerodromes,
- forcible intrusion on board an aircraft, at an airport or on the premises of an aeronautical facility,
- introduction on board an aircraft or at an airport of a weapon or hazardous device or material intended for criminal purposes,
- communication of false information as to jeopardize the safety of an aircraft in flight or on the ground, of passengers, crew, ground personnel or the general public, at an airport or on the premises of a civil aviation facility.

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.

Aerodrome operating minima. The limits of usability of an aerodrome 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.

Aeroplane. A power-driven heavier-than-air aircraft, deriving its lift in flight chiefly from aerodynamic reactions on surfaces which remain fixed under given conditions of flight.

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.

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 aerodrome. An aerodrome to which an aircraft may proceed when it becomes either impossible or inadvisable to proceed to or to land at the aerodrome 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 aerodromes include the following:

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

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

Destination alternate. An alternate aerodrome at which an aircraft would be able to land should it become either impossible or inadvisable to land at the aerodrome of intended landing.

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

Altimetry system error (ASE). The difference between the altitude indicated by the altimeter display, assuming a correct altimeter barometric setting, and the pressure altitude corresponding to the undisturbed ambient pressure.

Area navigation (RNAV). A method of navigation which permits aircraft operation on any desired flight path within the coverage of ground- or spaced-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.

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.

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.

Continuing airworthiness. The set of processes by which an aircraft, engine, propeller or part complies with the applicable airworthiness requirements and remains in a condition for safe operation throughout its operating life.

Continuous descent final approach (CDFA). A technique, consistent with stabilized approach procedures, for flying the final approach segment of a non-precision instrument approach 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 should begin for the type of aircraft flown.

Corporate aviation operation. The non-commercial operation or use of aircraft by a company for the carriage of passengers or goods as an aid to the conduct of company business, flown by a professional pilot(s) employed to fly the aircraft.

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 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”.

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.

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).

Extended flight over water. A flight operated over water at a distance of more than 93 km (50 NM), or 30 minutes at normal cruising speed, whichever is the lesser, away from land suitable for making an emergency landing.

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 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 plan. Specified information provided to air traffic services units, relative to an intended flight or portion of a flight of an aircraft.

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

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 — aeroplanes. The total time from the moment an aeroplane first moves for the purpose of taking off until the moment it finally comes to rest at the end of the flight.

Note.— Flight time as here defined is synonymous with the term “block to block” time or “chock to chock” time in general usage which is measured from the time an aeroplane first moves for the purpose of taking off until it finally stops at the end of the flight.

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

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

Industry codes of practice. Guidance material developed by an industry body, for a particular sector of the aviation industry to comply with the requirements of the International Civil Aviation Organization’s Standards and Recommended Practices, other aviation safety requirements and the best practices deemed appropriate.

Note.— Some States accept and reference industry codes of practice in the development of regulations to meet the requirements of Annex 6, Part II, and make available, for the industry codes of practice, their sources and how they may be obtained.

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 vertical navigation (VNAV) guidance calculated by on-board equipment (see PANS-OPS (Doc 8168), Volume I, Part I, Section 4, Chapter 1, paragraph 1.8.1) 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 I, Section 4, Chapter 1, paragraphs 1.7 and 1.8.

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 2, Chapter 2.2, 2.2.2.2.2, 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.

Isolated aerodrome. A destination aerodrome for which there is no destination alternate aerodrome suitable for a given aeroplane type.

Large aeroplane. An aeroplane of a maximum certificated take-off mass of over 5 700 kg.

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

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, either in accordance with the approved data and the procedures described in the maintenance organization's procedures manual or under an equivalent system.

Meteorological information. Meteorological report, analysis, forecast, and any other statement relating to existing or expected meteorological conditions.

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.

* As defined in Annex 2.

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”.

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.

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”.

Operating base. The location from which operational control is exercised.

Note.— An operating base is normally the location where personnel involved in the operation of the aeroplane work and the records associated with the operation are located. An operating base has a degree of permanency beyond that of a regular point of call.

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

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

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

Note.— In the context of Annex 6, Part II, the operator is not engaged in the transport of passengers, cargo or mail for remuneration or hire.

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.

Pilot-in-command. The pilot designated by the operator or 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 aeroplane can proceed to the destination aerodrome as well as to an available en-route alternate aerodrome for a given flight.

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

RCP type. A label (e.g. RCP 240) that represents the values assigned to RCP parameters for communication transaction time, continuity, availability and integrity.

Repair. The restoration of an aeronautical product to an airworthy condition to ensure that the aircraft continues to comply with the design aspects of the appropriate airworthiness requirements used for the issuance of the type certificate for the respective aircraft type, after it has been damaged or subjected to wear.

Required communication performance (RCP). A statement of the performance requirements for operational communication in support of specific ATM functions.

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.

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.

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

Target level of safety (TLS). A generic term representing the level of risk which is considered acceptable in particular circumstances.

Total vertical error (TVE). The vertical geometric difference between the actual pressure altitude flown by an aircraft and its assigned pressure altitude (flight level).

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.

* As defined in Annex 2.

CHAPTER 1.2 APPLICABILITY

The Standards and Recommended Practices contained in Annex 6, Part II, shall be applicable to international general aviation operations with aeroplanes as described in Section 2 and Section 3.

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 commercial air transport operations or international general aviation operations with helicopters are to be found in Annex 6, Part III.

Note 3.— Section 2 of Annex 6, Part II, applies to all international general aviation aeroplane operations, including those covered in Section 3. Section 3 adds additional requirements for large aeroplanes, turbojet aeroplanes and corporate aviation operations.



ANNEX 6 — PART II

SECTION 2

GENERAL AVIATION OPERATIONS

CHAPTER 2.1 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 an operator of another State and that the Convention may not adequately specify the rights and obligations of the State of an 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 aeroplanes not all of which are registered in the same Contracting State, nothing in this Part prevents the States concerned entering into an agreement for the joint exercise of the functions placed upon the State of Registry by the provisions of the relevant Annexes.

2.1.1 Compliance with laws, regulations and procedures

2.1.1.1 The pilot-in-command shall comply with the laws, regulations and procedures of those States in which operations are conducted.

2.1.1.2 The pilot-in-command shall be familiar with the laws, regulations and procedures, pertinent to the performance of his or her duties, prescribed for the areas to be traversed, the aerodromes to be used and the air navigation facilities relating thereto. The pilot-in-command shall ensure that other members of the flight crew are familiar with such of these laws, regulations and procedures as are pertinent to the performance of their respective duties in the operation of the aeroplane.

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.

2.1.1.3 The pilot-in-command shall have responsibility for operational control.

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

2.1.1.4 If an emergency situation which endangers the safety or security of the aeroplane 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 of the aeroplane. Such reports shall be submitted as soon as possible and normally within ten days.

2.1.1.5 **Recommendation.**— *The pilot-in-command should have available on board the aeroplane the essential information concerning the search and rescue services in the area over which the aeroplane will be flown.*

2.1.1.6 The pilot-in-command shall ensure that flight crew members demonstrate the ability to speak and understand the language used for aeronautical radiotelephony communications as specified in Annex 1.

2.1.2 Dangerous goods

Note 1.— Provisions for carriage of dangerous goods are contained in Annex 18.

Note 2.— Article 35 of the Convention refers to certain classes of cargo restrictions.

2.1.3 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.

CHAPTER 2.2 FLIGHT OPERATIONS

2.2.1 Operating facilities

The pilot-in-command 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 including communication facilities and navigation aids available and directly required on such flight, for the safe operation of the aeroplane, are adequate for the type of operation under which the flight is to be conducted.

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.

2.2.2 Operational management

2.2.2.1 Operating instructions — general

An aeroplane shall not be taxied on the movement area of an aerodrome unless the person at the controls is an appropriately qualified pilot or:

- a) has been duly authorized by the owner or in the case where it is leased the lessee, or a designated agent;
- b) is fully competent to taxi the aeroplane;
- c) is qualified to use the radio if radio communications are required; and
- d) has received instruction from a competent person in respect of aerodrome layout, and where appropriate, information on routes, signs, marking, lights, ATC signals and instructions, phraseology and procedures, and is able to conform to the operational standards required for safe aeroplane movement at the aerodrome.

2.2.2.2 Aerodrome operating minima

2.2.2.2.1 The pilot-in-command shall establish aerodrome operating minima in accordance with criteria specified by the State of Registry, for each aerodrome to be used in operations. Such minima shall not be lower than any that may be established for such aerodromes 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 aerodrome operating minima.

2.2.2.2.1.1 The State of Registry may approve operational credit(s) for operations with aeroplanes equipped with a HUD or equivalent displays, EVS, SVS or CVS. Such approvals shall not affect the classification of the instrument approach procedure.

Note 1.— Operational credit includes:

- a) for the purposes of an approach ban (2.2.4.1.2), a minima below the aerodrome 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 for aircraft equipped with a HUD or equivalent displays, EVS, SVS and CVS is contained in Attachment 2.B and 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).

2.2.2.2.2 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;
 - 3) Category IIIA (CAT IIIA): a decision height lower than 30 m (100 ft) or no decision height and a runway visual range not less than 175 m;
 - 4) Category IIIB (CAT IIIB): a decision height lower than 15 m (50 ft) or no decision height and a runway visual range less than 175 m but not less than 50 m; and
 - 5) Category IIIC (CAT IIIC): no decision height and no runway visual range limitations.

Note 1.— Where decision height (DH) and runway visual range (RVR) fall into different categories of operation, the instrument approach operation would be conducted in accordance with the requirements of the most demanding category (e.g. an operation with a DH in the range of CAT IIIA but with an RVR in the range of CAT IIIB would be considered a CAT IIIB operation or an operation with a DH in the range of CAT II but with an RVR in the range of CAT I would be considered a CAT II operation).

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 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).

2.2.2.2.3 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 I, Section 4, Chapter 1, paragraph 1.7.

2.2.2.2.4 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.

2.2.2.3 Passengers

2.2.2.3.1 The pilot-in-command shall ensure that passengers are made familiar with the location and use of:

- a) seat belts;
- b) emergency exits;
- c) life jackets, if the carriage of life jackets is prescribed;
- d) oxygen dispensing equipment if the use of oxygen is anticipated; and
- e) other emergency equipment provided for individual use, including passenger emergency briefing cards.

2.2.2.3.2 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.

2.2.2.3.3 In an emergency during flight, the pilot-in-command shall ensure that passengers are instructed in such emergency action as may be appropriate to the circumstances.

2.2.2.3.4 The pilot-in-command 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 an aeroplane shall be secured in their seats by means of the seat belts or harnesses provided.

2.2.3 Flight preparation

2.2.3.1 A flight shall not be commenced until the pilot-in-command is satisfied that:

- a) the aeroplane is airworthy, duly registered and that appropriate certificates with respect thereto are aboard the aeroplane;
- b) the instruments and equipment installed in the aeroplane are appropriate, taking into account the expected flight conditions;
- c) any necessary maintenance has been performed in accordance with Chapter 2.6;
- d) the mass of the aeroplane 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 aeroplane operating limitations, contained in the flight manual, or its equivalent, will not be exceeded.

2.2.3.2 **Recommendation.**— *The pilot-in-command should have sufficient information on climb performance with all engines operating to enable determination of the climb gradient that can be achieved during the departure phase for the existing take-off conditions and intended take-off technique.*

2.2.3.3 Flight planning

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 the instrument flight rules, shall include:

- a) a study of available current weather reports and forecasts; and
- b) 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.— It is the practice in some States to declare, for flight planning purposes, higher minima for an aerodrome when nominated as an alternate, than for the same aerodrome when planned as that of intended landing.

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

2.2.3.4 Meteorological conditions

2.2.3.4.1 A flight to be conducted in accordance with the visual flight rules 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 the visual flight rules will, at the appropriate time, be such as to enable compliance with these rules.

2.2.3.4.2 A flight to be conducted in accordance with the instrument flight rules shall not:

- a) take off from the departure aerodrome unless the meteorological conditions, at the time of use, are at or above the aerodrome operating minima for that operation; and
- b) take off or continue beyond the point of in-flight re-planning unless at the aerodrome of intended landing or at each alternate aerodrome to be selected in compliance with 2.2.3.5, current meteorological reports or a combination of current reports and forecasts indicate that the meteorological conditions will be, at the estimated time of use, at or above the aerodrome operating minima for that operation.

2.2.3.4.3 The State of Registry shall establish criteria to be used for the estimated time of use of an aerodrome including a margin of time.

Note.— A widely accepted time margin for “estimated time of use” is one hour before and after the earliest and latest time of arrival. Additional considerations can be found in the Flight Planning and Fuel Management (FPFM) Manual (Doc 9976).

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

2.2.3.4.5 A flight to be planned or expected to operate in suspected or known ground icing conditions shall not take off unless the aeroplane 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 aeroplane 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).

2.2.3.5 Alternate aerodromes

Destination alternate aerodromes

For a flight to be conducted in accordance with the instrument flight rules, at least one destination alternate aerodrome shall be selected and specified in the flight plans, unless:

- a) the duration of the flight from the departure aerodrome, or from the point of in-flight re-planning, to the destination aerodrome is such that, taking into account all meteorological conditions and operational information relevant to the flight, at the estimated time of use, a reasonable certainty exists that:
 - 1) the approach and landing may be made under visual meteorological conditions; and
 - 2) separate runways are usable at the estimated time of use of the destination aerodrome with at least one runway having an operational instrument approach procedure; or
- b) the aerodrome of intended landing is isolated and:
 - 1) a standard instrument approach procedure is prescribed for the aerodrome of intended landing;
 - 2) a point of no return has been determined; and
 - 3) a flight shall not be continued past the point of no return unless available current meteorological information indicates that the following meteorological conditions will exist at the estimated time of use:
 - i) a cloud base of at least 300 m (1 000 ft) above the minimum associated with the instrument approach procedure; and
 - ii) visibility of at least 5.5 km (3 NM) or of 4 km (2 NM) more than the minimum associated with the instrument approach procedure.

Note.— Separate runways are two or more runways at the same aerodrome configured such that if one runway is closed, operations to the other runway(s) can be conducted.

2.2.3.6 Fuel and oil requirements

2.2.3.6.1 A flight shall not be commenced unless, taking into account both the meteorological conditions and any delays that are expected in flight, the aeroplane carries sufficient fuel and oil to ensure that it can safely complete the flight. The amount of fuel to be carried must permit:

- a) when the flight is conducted in accordance with the instrument flight rules and a destination alternate aerodrome is not required in accordance with 2.2.3.5, or when the flight is to an isolated aerodrome, flight to the aerodrome of intended landing, and after that, have a final reserve fuel for at least 45 minutes at normal cruising altitude; or
- b) when the flight is conducted in accordance with the instrument flight rules and a destination alternate aerodrome is required, flight to the aerodrome of intended landing, then to an alternate aerodrome, and after that, have a final reserve fuel for at least 45 minutes at normal cruising altitude; or
- c) when the flight is conducted in accordance with the visual flight rules by day, flight to the aerodrome of intended landing, and after that, have a final reserve fuel for at least 30 minutes at normal cruising altitude; or
- d) when the flight is conducted in accordance with the visual flight rules by night, flight to the aerodrome of intended landing and thereafter have a final reserve fuel for at least 45 minutes at normal cruising altitude.

Note 1.— Nothing in 2.2.3.6 precludes amendment of a flight plan in flight in order to replan the flight to another aerodrome, provided that the requirements of 2.2.3.6 can be complied with from the point where the flight is replanned.

Note 2.— Guidance on planning operations to isolated aerodromes is contained in the Flight Planning and Fuel Management (FPFM) Manual (Doc 9976).

2.2.3.6.2 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.

2.2.3.7 Refuelling with passengers on board

2.2.3.7.1 **Recommendation.**— *An aeroplane should not be refuelled when passengers are embarking, on board or disembarking unless it is attended by the pilot-in-command or other qualified personnel ready to initiate and direct an evacuation of the aeroplane by the most practical and expeditious means available.*

2.2.3.7.2 **Recommendation.**— *When refuelling with passengers embarking, on board or disembarking, two-way communications should be maintained by the aeroplane's intercommunication system or other suitable means between the ground crew supervising the refuelling and the pilot-in-command or other qualified personnel required by 2.2.3.7.1.*

Note 1.— The provisions of 2.2.3.7.1 do not necessarily require the deployment of integral aeroplane stairs or the opening of emergency exits as a prerequisite to refuelling.

Note 2.— 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 3.— 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.

2.2.3.8 Oxygen supply

The pilot-in-command shall ensure that breathing oxygen is available to crew members and passengers in sufficient quantities for all flights at such altitudes where a lack of oxygen might result in impairment of the faculties of crew members or harmfully affect passengers.

Note 1.— Guidance on the carriage and use of oxygen is given in Attachment 2.A.

Note 2.— Approximate altitudes in the Standard Atmosphere corresponding to the values of absolute pressure used in the text of Attachment 2.A 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