COVER SHEET TO AMENDMENT 32

INTERNATIONAL STANDARDS
AND RECOMMENDED PRACTICES

OPERATION OF AIRCRAFT

ANNEX 6
TO THE CONVENTION ON INTERNATIONAL CIVIL AVIATION

PART I
INTERNATIONAL COMMERCIAL AIR TRANSPORT — AEROPLANES

EIGHTH EDITION — JULY 2001

INTERNATIONAL CIVIL AVIATION ORGANIZATION

Checklist of Amendments to Annex 6, Part I

	Effective date	*Date of applicability*
Eighth Edition (incorporates Amendments 1 to 26)	16 July 2001	1 November 2001
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Transmittal note

Amendment 32

to the

International Standards and
Recommended Practices

OPERATION OF AIRCRAFT

(Annex 6, Part I to the Convention on International Civil Aviation)

1. Insert the following new and replacement pages in Annex 6, Part I (Eighth Edition) to incorporate Amendment 32 which becomes applicable on 20 November 2008:

a)	Pages (iii) to (v)	— Table of Contents
b)	Pages (vi) and (vii)	— Abbreviations and Symbols
c)	Page (viii)	— Publications
d)	Page (xxi)	— Foreword
e)	Pages 1-2 to 1-6	— Chapter 1
f)	Pages 3-2 and 3-3	— Chapter 3
g)	Pages 4-1 to 4-10	— Chapter 4
h)	Pages 6-1 and 6-2	— Chapter 6
i)	Page 7-1	— Chapter 7
j)	Page 9-1	— Chapter 9
k)	Page 10-1	— Chapter 10
l)	Page 11-1	— Chapter 11
m)	Pages APP 2-1 to APP 2-3	— Appendix 2
n)	Pages APP 5-1 and APP 5-2	— Appendix 5
o)	Pages APP 6-1 to APP 6-3	— Appendix 6
p)	Page ATT A-1	— Attachment A
q)	Pages ATT F-1 to ATT F-5	— Attachment F

2. Record the entry of this amendment on page (ii).

20/7/08

TABLE OF CONTENTS

ABBREVIATIONS AND SYMBOLS
(used in this Annex)

Abbreviations

AC	Alternating current
ACAS	Airborne collision avoidance system
ADS	Automatic dependent surveillance
ADS-C	Automatic dependent surveillance — contract
AFCS	Automatic flight control system
AGA	Aerodromes, air routes and ground aids
AIG	Accident investigation and prevention
AOC	Aeronautical operational control
AOC	Air operator certificate
APU	Auxiliary power unit
ASDA	Accelerate stop distance available
ASE	Altimetry system error
ASIA/PAC	Asia/Pacific
ATC	Air traffic control
ATM	Air traffic management
ATS	Air traffic services
CAS	Calibrated airspeed
CAT I	Category I
CAT II	Category II
CAT III	Category III
CAT IIIA	Category IIIA
CAT IIIB	Category IIIB
CAT IIIC	Category IIIC
cm	Centimetre
CDL	Configuration deviation list
CFIT	Controlled flight into terrain
CPDLC	Controller-pilot data link communications
CVR	Cockpit voice recorder
DA	Decision altitude
DA/H	Decision altitude/height
DC	Device control
D-FIS	Data link-flight information services
DH	Decision height
DME	Distance measuring equipment
DSTRK	Desired track
ECAM	Electronic centralized aircraft monitor
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
ETOPS	Extended range operations by turbine-engined aeroplanes
EUROCAE	European Organization for Civil Aviation Equipment
FDAU	Flight data acquisition unit
FDR	Flight data recorder
FL	Flight level
FM	Frequency modulation
ft	Foot
ft/min	Feet per minute
g	Normal acceleration
GCAS	Ground collision avoidance system
GNSS	Global navigation satellite system
GPWS	Ground proximity warning system
hPa	Hectopascal
IFR	Instrument flight rules
ILS	Instrument landing system

Abbreviations

IMC	Instrument meteorological conditions
INS	Inertial navigation system
ISA	International standard atmosphere
kg	Kilogram
kg/m^2	Kilogram per metre squared
km	Kilometre
km/h	Kilometre per hour
kt	Knot
kt/s	Knots per second
lb	Pound
LDA	Landing distance available
m	Metre
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 specifications
MOPS	Minimum Operational Performance Specification
m/s	Metres per second
m/s^2	Metres per second squared
N	Newton
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 speed (three-stage compressor)
N_3	High pressure compressor speed (three stage compressor)
NAV	Navigation
NM	Nautical mile
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
RVR	Runway visual range
RVSM	Reduced vertical separation minima
SICASP	Secondary Surveillance Radar Improvements and Collision Avoidance Systems Panel
SOP	Standard operating procedures
SST	Supersonic transport
STOL	Short take-off and landing
TAS	True airspeed
TAWS	Terrain awareness warning system
TCAS	Traffic alert and collision avoidance system
TLA	Thrust lever angle
TLS	Target level of safety
TODA	Take-off distance available
TORA	Take-off run available
TVE	Total vertical error
UTC	Coordinated universal time
VFR	Visual flight rules
V_D	Design diving speed
VMC	Visual meteorological conditions

Abbreviations

V_{MC}	Minimum control speed with the critical engine inoperative
VOR	VHF omnidirectional radio range
V_{S_0}	Stalling speed or the minimum steady flight speed in the landing configuration
V_{S_1}	Stalling speed or the minimum steady flight speed in a specified configuration
VTOL	Vertical take-off and landing
WXR	Weather

Symbols

°C	Degrees Celsius
%	Per cent

PUBLICATIONS
(referred to in this Annex)

Convention on International Civil Aviation (Doc 7300)

European Organization for Civil Aviation Equipment (EUROCAE) Documents ED55 and ED56A

International Regulations for Preventing Collisions at Sea

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

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 II — *International General Aviation — Aeroplanes*
Part III — *International Operations — Helicopters*

Annex 7 — *Aircraft Nationality and Registration Marks*

Annex 8 — *Airworthiness of Aircraft*

Annex 9 — *Facilitation*

Annex 10 — *Aeronautical Telecommunications*
Volume III (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*

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*
TRG — Training (Doc 9868)

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)

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 Criteria for the Qualification of Flight Simulators (Doc 9625)

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

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

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 Communications Performance (RCP) (Doc 9869)

Performance-based Navigation Manual (Doc 9613)

Preparation of an Operations Manual (Doc 9376)

Safety Management Manual (SMM) (Doc 9859)

Safety Oversight Manual (Doc 9734)
Part A — *The Establishment and Management of a State's Safety Oversight System*

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

Circulars

Guidance Material on SST Aircraft Operations (Cir 126)

Guidance on the Implementation of Article 83 bis *of the Convention on International Civil Aviation* (Cir 295)

Amendment	*Source(s)*	*Subject(s)*	*Adopted Effective Applicable*
30	First meeting of the Surveillance and Conflict Resolution Systems Panel, 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, Assembly Resolution A35-17, 35th Session of the Assembly, and the Eleventh Air Navigation Conference	a) The carriage of altitude encoders with higher resolution; b) 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; c) pilot awareness of operational requirements determined by procedure design; d) qualifications for flight operations officers/flight dispatchers and the critical elements of a State regulatory system; e) the carriage of a copy of the air operator certificate in aircraft; f) legal guidance for the protection of information from safety data collection and processing systems; and g) 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
31	First meeting of the Operational Data Link Panel (OPLINKP/1), First meeting of the Surveillance and Conflict Resolution Systems Panel (SCRSP/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); b) amendment of existing provisions related to the mandatory carriage requirements of emergency locator transmitters (ELTs) as of 1 July 2008; and c) changes to Standards related to pressure-altitude data sources used by transponders as of 1 January 2009 and 1 January 2012.	14 March 2007 16 July 2007 22 November 2007 1 July 2008 1 January 2009 1 January 2012
32	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 (PBN) concept.	3 March 2008 20 July 2008 20 November 2008 1 January 2010

INTERNATIONAL STANDARDS AND RECOMMENDED PRACTICES

CHAPTER 1. DEFINITIONS

When the following terms are used in the Standards and Recommended Practices for operation of aircraft in international commercial air transport, they have the following meanings:

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 precision approach and landing operations, expressed in terms of visibility and/or runway visual range and decision altitude/height (DA/H) as appropriate to the category of the operation;

c) landing in approach and landing operations with vertical guidance, expressed in terms of visibility and/or runway visual range and decision altitude/height (DA/H); and

d) landing in non-precision approach and landing operations, expressed in terms of visibility and/or runway visual range, minimum descent altitude/height (MDA/H) and, if necessary, cloud conditions.

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.

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.

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. Alternate aerodromes include the following:

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

En-route alternate. An aerodrome at which an aircraft would be able to land after experiencing an abnormal or emergency condition while en route.

ETOPS en-route alternate. A suitable and appropriate alternate aerodrome at which an aeroplane would be able to land after experiencing an engine shutdown or other abnormal or emergency condition while en route in an ETOPS operation.

Destination alternate. An alternate aerodrome to which an aircraft may proceed 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.

Approach and landing operations using instrument approach procedures. Instrument approach and landing operations are classified as follows:

Non-precision approach and landing operations. An instrument approach and landing which utilizes lateral guidance but does not utilize vertical guidance.

Approach and landing operations with vertical guidance. An instrument approach and landing which utilizes lateral and vertical guidance but does not meet the requirements established for precision approach and landing operations.

Precision approach and landing operations. An instrument approach and landing using precision lateral and vertical guidance with minima as determined by the category of operation.

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

a) a ground-based navigation aid; or

b) computer generated navigation data.

Categories of precision approach and landing operations:

Category I (CAT I) operation. A precision instrument approach and landing with 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.

Category II (CAT II) operation. A precision instrument approach and landing with 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 350 m.

Category IIIA (CAT IIIA) operation. A precision instrument approach and landing with:

a) a decision height lower than 30 m (100 ft) or no decision height; and

b) a runway visual range not less than 200 m.

Category IIIB (CAT IIIB) operation. A precision instrument approach and landing with:

a) a decision height lower than 15 m (50 ft) or no decision height; and

b) a runway visual range less than 200 m but not less than 50 m.

Category IIIC (CAT IIIC) operation. A precision instrument approach and landing with no decision height and no runway visual range limitations.

Note.— Where decision height (DH) and runway visual range (RVR) fall into different categories of operation, the instrument approach and landing 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).

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.

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.

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.

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

Cruise relief pilot. A flight crew member who is assigned to perform pilot tasks during cruise flight, to allow the pilot-in-command or a co-pilot to obtain planned rest.

Cruising level. A level maintained during a significant portion of a flight.

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 the precision approach or approach with vertical guidance 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".

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.

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

Flight data analysis. A process of analysing recorded flight data in order to improve the safety of flight operations.

Flight duty period. The total time from the moment a flight crew member commences duty, immediately subsequent to a rest period and prior to making a flight or a series of flights, to the moment the flight crew member is relieved of all duties having completed such flight or series of flights.

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 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 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 — 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.

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

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 and efficiency of aeronautical operations.

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.

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

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 non-precision approach or circling approach 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.

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:

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.

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

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 approaches 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 is referenced to the aerodrome elevation.

*As defined in Annex 2.

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

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.

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

Operator. A 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 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 in the case of general aviation, the owner, as being in command and charged with the safe conduct of a flight.

Pressure-altitude. An atmospheric pressure expressed in terms of altitude which corresponds to that pressure in the Standard Atmosphere*.

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 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.

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

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. A systematic approach to managing safety, including the necessary organizational structures, accountabilities, policies and procedures.

Safety programme. An integrated set of regulations and activities aimed at improving safety.

Small aeroplane. An aeroplane of a maximum certificated take-off mass of 5 700 kg or less.

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 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.

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).

*As defined in Annex 8.

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.

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* As defined in Annex 2.

CHAPTER 3. 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.

3.1 Compliance with laws, regulations and procedures

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

3.1.2 An 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 aerodromes 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 laws, regulations and procedures as are pertinent to the performance of their respective duties in the operation of the aeroplane.

Note.— Information for pilots and flight operations personnel on flight procedure parameters and operational procedures is contained in PANS-OPS, Volume I. Criteria for the construction of visual and instrument flight procedures are contained in PANS-OPS, 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.

3.1.3 An 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 aeroplanes registered in that State are not affected by this provision.

3.1.4 Responsibility for operational control shall be delegated only to the pilot-in-command and to a flight operations officer/flight dispatcher if an 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* 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.*

3.1.5 If an emergency situation which endangers the safety of the aeroplane or persons becomes known first to the flight operations officer/flight dispatcher, action by that person in accordance with 4.6.2 shall include, where necessary, notification to the appropriate authorities of the nature of the situation without delay, and requests for assistance if required.

3.1.6 If an emergency situation which endangers the safety 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 the Operator. Such reports shall be submitted as soon as possible and normally within ten days.

3.1.7 Operators shall ensure that pilots-in-command have available on board the aeroplane all the essential information

concerning the search and rescue services in the area over which the aeroplane 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.

3.1.8 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.

3.2 Compliance by a foreign operator with laws, regulations and procedures of a State

3.2.1 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.

3.2.2 In the case of notification to States as specified in 3.2.1, 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 3.2.2, 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.*

3.3 Safety management

3.3.1 States shall establish a safety programme in order to achieve an acceptable level of safety in the operation of aircraft.

3.3.2 The acceptable level of safety to be achieved shall be established by the State(s) concerned.

Note.— Guidance on safety programmes is contained in the Safety Management Manual (SMM) *(Doc 9859), and the definition of acceptable levels of safety is contained in Attachment E to Annex 11.*

3.3.3 **Recommendation.**— *States should require, as part of their safety programme, that an operator implement a safety management system acceptable to the State of the Operator that, as a minimum:*

a) identifies safety hazards;

b) ensures that remedial action necessary to maintain an acceptable level of safety is implemented;

c) provides for continuous monitoring and regular assessment of the safety level achieved; and

d) aims to make continuous improvement to the overall level of safety.

3.3.4 From 1 January 2009, States shall require, as part of their safety programme, that an operator implement a safety management system acceptable to the State of the Operator that, as a minimum:

a) identifies safety hazards;

b) ensures that remedial action necessary to maintain an acceptable level of safety is implemented;

c) provides for continuous monitoring and regular assessment of the safety level achieved; and

d) aims to make continuous improvement to the overall level of safety.

3.3.5 A safety management system shall clearly define lines of safety accountability throughout the operator's organization, including a direct accountability for safety on the part of senior management.

Note.— Guidance on safety management systems is contained in the Safety Management Manual (SMM) *(Doc 9859).*

3.3.6 **Recommendation.**— *An operator of an aeroplane of a certificated take-off mass in excess of 20 000 kg should establish and maintain a flight data analysis programme as part of its safety management system.*

3.3.7 An operator of an aeroplane of a maximum certificated take-off mass in excess of 27 000 kg shall establish and maintain a flight data analysis programme as part of its safety management system.

Note.— An 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.

3.3.8 A flight data analysis programme shall be non-punitive and contain adequate safeguards to protect the source(s) of the data.

Note 1.— Guidance on flight data analysis programmes is contained in the Safety Management Manual (SMM) *(Doc 9859).*

Note 2.— Legal guidance for the protection of information from safety data collection and processing systems is contained in Annex 13, Attachment E.

3.3.9 An 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 H.

3.4 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.

3.5 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 4. FLIGHT OPERATIONS

4.1 Operating facilities

4.1.1 An 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 aeroplane 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.

4.1.2 An 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.

4.1.3 Subject to their published conditions of use, aerodromes and their facilities shall be kept continuously available for flight operations during their published hours of operations, irrespective of weather conditions.

4.2 Operational certification and supervision

4.2.1 The air operator certificate

4.2.1.1 An 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.

4.2.1.2 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 4.2.1.5 and 4.2.1.6.

4.2.1.3 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 F contains guidance on the issue of an air operator certificate.

4.2.1.4 The continued validity of an air operator certificate shall depend upon the operator maintaining the requirements of 4.2.1.3 under the supervision of the State of the Operator.

4.2.1.5 The air operator certificate shall contain at least the following information and, from 1 January 2010, shall follow the layout of Appendix 6, 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.

4.2.1.6 The operations specifications associated with the air operator certificate shall contain at least the information listed in Appendix 6, paragraph 3, and, from 1 January 2010, shall follow the layout of Appendix 6, paragraph 3.

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

4.2.1.7 Air operator certificates and their associated operations specifications first issued from 20 November 2008 shall follow the layouts of Appendix 6, paragraphs 2 and 3.

4.2.1.8 The State of the Operator shall establish a system for both the certification and the continued surveillance of the operator in accordance with Appendix 5 to ensure that the required standards of operations established in 4.2 are maintained.

4.2.2 Surveillance of operations by a foreign operator

4.2.2.1 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.

4.2.2.2 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.

4.2.2.3 An 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).*

4.2.3 Operations manual

4.2.3.1 An operator shall provide, for the use and guidance of operations personnel concerned, an operations manual in accordance with Appendix 2. 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 issued to all personnel that are required to use this manual.

4.2.3.2 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.— Requirements for the organization and content of an operations manual are provided in Appendix 2.

Note 2.— Specific items in the operations manual require the approval of the State of the Operator in accordance with the Standards in 4.2.8, 6.1.3, 9.3.1, 12.4 and 13.4.1.

4.2.4 Operating instructions — general

4.2.4.1 An 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.

4.2.4.2 An aeroplane shall not be taxied on the movement area of an aerodrome unless the person at the controls:

a) has been duly authorized by the operator or a designated agent;

b) is fully competent to taxi the aeroplane;

c) is qualified to use the radiotelephone; and

d) has received instruction from a competent person in respect of aerodrome layout, routes, signs, marking, lights, air traffic control (ATC) signals and instructions, phraseology and procedures, and is able to conform to the operational standards required for safe aeroplane movement at the aerodrome.

4.2.4.3 **Recommendation.—** *The operator should issue operating instructions and provide information on aeroplane climb performance with all engines operating to enable the pilot-in-command to determine the climb gradient that can be achieved during the departure phase for the existing take-off conditions and intended take-off technique. This information should be included in the operations manual.*

4.2.5 In-flight simulation of emergency situations

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

4.2.6 Checklists

The checklists provided in accordance with 6.1.4 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 and the aeroplane flight manual or other documents associated with the certificate of airworthiness and otherwise in the operations manual, are followed. 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).*

4.2.7 Minimum flight altitudes

4.2.7.1 An 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.

4.2.7.2 An 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.

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

4.2.7.4 **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 aeroplane 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.

4.2.8 Aerodrome operating minima

4.2.8.1 The State of the Operator shall require that the operator establish aerodrome operating minima for each aerodrome 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 aerodromes by the State in which the aerodrome is located, except when specifically approved by that State.

Note.— This Standard does not require the State in which the aerodrome is located to establish aerodrome operating minima.

4.2.8.2 The State of the Operator shall require that in establishing the aerodrome operating minima which will apply to any particular operation, full account shall be taken of:

a) the type, performance and handling characteristics of the aeroplane;

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

c) the dimensions and characteristics of the runways which may be selected for use;

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

e) the equipment available on the aeroplane for the purpose of navigation and/or control of the flight path during the approach to landing and the 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; and

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

Note.— Guidance on the establishment of aerodrome operating minima is contained in the Manual of All-Weather Operations *(Doc 9365).*

4.2.8.3 Category II and Category III instrument approach and landing operations shall not be authorized unless RVR information is provided.

4.2.8.4 **Recommendation.**— *For instrument approach and landing operations, aerodrome operating minima below 800 m visibility should not be authorized unless RVR information is provided.*

4.2.9 Threshold crossing height for precision approaches

An operator shall establish operational procedures designed to ensure that an aeroplane being used to conduct precision approaches crosses the threshold by a safe margin, with the aeroplane in the landing configuration and attitude.

4.2.10 Fuel and oil records

4.2.10.1 An operator shall maintain fuel and oil records to enable the State of the Operator to ascertain that, for each flight, the requirements of 4.3.6 have been complied with.

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

4.2.11 Crew

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

4.2.11.2 *Flight time, flight duty periods and rest periods.* An operator shall formulate rules to limit flight time and flight duty periods and for the provision of adequate rest periods for all its crew members. These rules shall be in accordance with the regulations established by the State of the Operator, or approved by that State, and included in the operations manual.

Note.— Guidance on the establishment of limitations is given in Attachment A.

4.2.11.3 An operator shall maintain current records of the flight time, flight duty periods and rest periods of all its crew members.

4.2.11.4 For each flight of an aeroplane above 15 000 m (49 000 ft), the operator shall maintain records so that the total cosmic radiation dose received by each crew member over a period of 12 consecutive months can be determined.

Note.— Guidance on the maintenance of cumulative radiation records is given in Circular 126 — Guidance Material on SST Aircraft Operations.

4.2.12 Passengers

4.2.12.1 An operator 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 provision of oxygen for the use of passengers is prescribed; and

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

4.2.12.2 The operator shall inform the passengers of the location and general manner of use of the principal emergency equipment carried for collective use.

4.2.12.3 In an emergency during flight, passengers shall be instructed in such emergency action as may be appropriate to the circumstances.

4.2.12.4 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 an aeroplane shall be secured in their seats by means of the seat belts or harnesses provided.

4.3 Flight preparation

4.3.1 A flight shall not be commenced until flight preparation forms have been completed certifying that the pilot-in-command is satisfied that:

a) the aeroplane is airworthy;

b) the instruments and equipment prescribed in Chapter 6, for the particular type of operation to be undertaken, are installed and are sufficient for the flight;

c) a maintenance release as prescribed in 8.8 has been issued in respect of the aeroplane;

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;

f) a check has been completed indicating that the operating limitations of Chapter 5 can be complied with for the flight to be undertaken; and

g) the Standards of 4.3.3 relating to operational flight planning have been complied with.

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

4.3.3 Operational flight planning

4.3.3.1 An operational flight plan shall be completed for every intended flight. The operational flight plan shall be approved and signed by the pilot-in-command and, where applicable, signed by the flight operations officer/flight dispatcher, and a copy shall be filed with the operator or a designated agent, or, if these procedures are not possible, it shall be left with the aerodrome authority or on record in a suitable place at the point of departure.

Note.— The duties of a flight operations officer/flight dispatcher are contained in 4.6.

4.3.3.2 The operations manual must describe the content and use of the operational flight plan.

4.3.4 Alternate aerodromes

4.3.4.1 *Take-off alternate aerodrome*

4.3.4.1.1 A take-off alternate aerodrome shall be selected and specified in the operational flight plan if the weather conditions at the aerodrome of departure are at or below the applicable aerodrome operating minima or it would not be possible to return to the aerodrome of departure for other reasons.

4.3.4.1.2 The take-off alternate aerodrome shall be located within the following distance from the aerodrome of departure:

a) aeroplanes having two power-units. Not more than a distance equivalent to a flight time of one hour at the single-engine cruise speed; and

b) aeroplanes having three or more power-units. Not more than a distance equivalent to a flight time of two hours at the one-engine inoperative cruise speed.

4.3.4.1.3 For an aerodrome 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 aerodrome operating minima for that operation.

4.3.4.2 *En-route alternate aerodromes*

En-route alternate aerodromes, required by 4.7 for extended range operations by aeroplanes with two turbine power-units, shall be selected and specified in the operational and air traffic services (ATS) flight plans.

4.3.4.3 *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 operational and ATS flight plans, 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 aerodrome of intended landing, and for a reasonable period before and after such time, the approach and landing may be made under visual meteorological conditions; or

b) the aerodrome of intended landing is isolated and there is no suitable destination alternate aerodrome.

4.3.5 Weather conditions

4.3.5.1 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 render compliance with these rules possible.

4.3.5.2 A flight to be conducted in accordance with instrument flight rules shall not be commenced unless information is available which indicates that conditions at the aerodrome of intended landing or, where a destination alternate is required, at least one destination alternate aerodrome will, at the estimated time of arrival, be at or above the aerodrome operating minima.

Note.— It is the practice in some States to declare, for flight planning purposes, higher minima for an aerodrome when nominated as a destination alternate than for the same aerodrome when planned as that of intended landing.

4.3.5.3 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.

4.3.5.4 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).*

4.3.6 Fuel and oil supply

Note.— Fuel and oil reserves for supersonic aeroplanes will require special consideration to account for the particular operating characteristics of this type of aeroplane. Guidance on fuel supplies for supersonic aeroplanes is given in Circular 126 — Guidance Material on SST Aircraft Operations.

4.3.6.1 *All aeroplanes.* 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. In addition, a reserve shall be carried to provide for contingencies.

4.3.6.2 *Propeller-driven aeroplanes.* The fuel and oil carried in order to comply with 4.3.6.1 shall, in the case of propeller-driven aeroplanes, be at least the amount sufficient to allow the aeroplane:

4.3.6.2.1 When a destination alternate aerodrome is required, either:

a) to fly to the aerodrome to which the flight is planned thence to the most critical (in terms of fuel consumption) alternate aerodrome specified in the operational and ATS flight plans and thereafter for a period of 45 minutes; or

b) to fly to the alternate aerodrome via any predetermined point and thereafter for 45 minutes, provided that this shall not be less than the amount required to fly to the aerodrome to which the flight is planned and thereafter for:

1) 45 minutes plus 15 per cent of the flight time planned to be spent at the cruising level(s), or

2) two hours,

whichever is less.

4.3.6.2.2 When a destination alternate aerodrome is not required:

a) in terms of 4.3.4.3 a), to fly to the aerodrome to which the flight is planned and thereafter for a period of 45 minutes; or

b) in terms of 4.3.4.3 b), to fly to the aerodrome to which the flight is planned and thereafter for:

1) 45 minutes plus 15 per cent of the flight time planned to be spent at the cruising level(s), or

2) two hours,

whichever is less.

4.3.6.3 *Aeroplanes equipped with turbo-jet engines.* The fuel and oil carried in order to comply with 4.3.6.1 shall, in the case of turbo-jet aeroplanes, be at least the amount sufficient to allow the aeroplane:

4.3.6.3.1 When a destination alternate aerodrome is required, either:

a) to fly to and execute an approach, and a missed approach, at the aerodrome to which the flight is planned, and thereafter:

1) to fly to the alternate aerodrome specified in the operational and ATS flight plans; and then

2) to fly for 30 minutes at holding speed at 450 m (1 500 ft) above the alternate aerodrome under standard temperature conditions, and approach and land; and

3) to have an additional amount of fuel sufficient 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; or

b) to fly to the alternate aerodrome via any predetermined point and thereafter for 30 minutes at 450 m (1 500 ft) above the alternate aerodrome, due provision having been made for an additional amount of fuel sufficient 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; provided that fuel shall not be less than the amount of fuel required to fly to the aerodrome to which the flight is planned and thereafter for two hours at normal cruise consumption.

4.3.6.3.2 When a destination alternate aerodrome is not required:

a) in terms of 4.3.4.3 a), to fly to the aerodrome to which the flight is planned and additionally:

1) to fly 30 minutes at holding speed at 450 m (1 500 ft) above the aerodrome to which the flight is planned under standard temperature conditions; and

2) to have an additional amount of fuel, sufficient 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; and

b) in terms of 4.3.4.3 b), to fly to the aerodrome to which the flight is planned and thereafter for a period of two hours at normal cruise consumption.

4.3.6.4 In computing the fuel and oil required in 4.3.6.1 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 aerodrome, including a missed approach;

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

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

Note.— Nothing in 4.3.6 precludes amendment of a flight plan in flight in order to replan the flight to another aerodrome, provided that the requirements of 4.3.6 can be complied with from the point where the flight has been replanned.

4.3.7 Refuelling with passengers on board

4.3.7.1 An aeroplane shall not be refuelled when passengers are embarking, on board or disembarking unless it is properly attended by qualified personnel ready to initiate and direct an evacuation of the aeroplane by the most practical and expeditious means available.

4.3.7.2 When refuelling with passengers embarking, on board or disembarking, two-way communication shall be maintained by the aeroplane's inter-communication system or other suitable means between the ground crew supervising the refuelling and the qualified personnel on board the aeroplane.

Note 1.— The provisions of 4.3.7.1 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.

4.3.8 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*

4.3.8.1 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.

4.3.8.2 A flight to be operated with a pressurized aeroplane 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 an aeroplane is 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 and cannot descend safely within four minutes to a flight altitude at which the atmospheric pressure is equal to 620 hPa, there shall be no less than a 10-minute supply for the occupants of the passenger compartment.

4.4 In-flight procedures

4.4.1 Aerodrome operating minima

4.4.1.1 A flight shall not be continued towards the aerodrome of intended landing, unless the latest available information indicates that at the expected time of arrival, a landing can be effected at that aerodrome or at least one destination alternate aerodrome, in compliance with the operating minima established in accordance with 4.2.8.1.

4.4.1.2 An instrument approach shall not be continued beyond the outer marker fix in case of precision approach, or below 300 m (1 000 ft) above the aerodrome in case of non-precision approach, unless the reported visibility or controlling RVR is above the specified minimum.

4.4.1.3 If, after passing the outer marker fix in case of precision approach, or after descending below 300 m (1 000 ft) above the aerodrome in case of non-precision approach, 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, an aeroplane shall not continue its approach-to-land at any aerodrome beyond a point at which the limits of the operating minima specified for that aerodrome would be infringed.

Note.— Controlling RVR means the reported values of one or more RVR reporting locations (touchdown, mid-point and stop-end) used to determine whether operating minima are or are not met. Where RVR is used, the controlling RVR is the touchdown RVR, unless otherwise specified by State criteria.

4.4.2 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) and the appropriate Regional Supplementary Procedures *(Doc 7030).*

4.4.3 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.

4.4.4 Flight crew members at duty stations

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

4.4.4.2 *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 aeroplane or for physiological needs.

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

4.4.4.4 *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 harnesses 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.

4.4.5 Use of oxygen

4.4.5.1 All flight crew members, when engaged in performing duties essential to the safe operation of an aeroplane in flight, shall use breathing oxygen continuously whenever the circumstances prevail for which its supply has been required in 4.3.8.1 or 4.3.8.2.

4.4.5.2 All flight crew members of pressurized aeroplanes operating above an altitude where the atmospheric pressure is less than 376 hPa shall have available at the flight duty station a quick-donning type of oxygen mask which will readily supply oxygen upon demand.

4.4.6 Safeguarding of cabin crew and passengers in pressurized aeroplanes 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.

4.4.7 In-flight operational instructions

Operational instructions involving a change in the ATS flight plan shall, when practicable, be coordinated with the appropriate ATS unit before transmission to the aeroplane.

Note.— When the above coordination has not been possible, operational instructions do not relieve a pilot of the responsibility for obtaining an appropriate clearance from an ATS unit, if applicable, before making a change in flight plan.

4.4.8 Instrument flight procedures

4.4.8.1 One or more instrument approach procedures designed in accordance with the classification of instrument approach and landing operations shall be approved and promulgated by the State in which the aerodrome is located to serve each instrument runway or aerodrome utilized for instrument flight operations.

4.4.8.2 All aeroplanes operated in accordance with instrument flight rules shall comply with the instrument flight procedures approved by the State in which the aerodrome is located.

Note 1.— Definitions for the classification of instrument approach and landing operations are in Chapter 1.

Note 2.— Operational procedures recommended for the guidance of operations personnel involved in instrument flight operations are described in PANS-OPS (Doc 8168), Volume I.

Note 3.— Criteria for the construction of instrument flight procedures for the guidance of procedure specialists are provided in PANS-OPS (Doc 8168), Volume II.

4.4.9 Aeroplane operating procedures for noise abatement

4.4.9.1 **Recommendation.—** *Aeroplane operating procedures for noise abatement should comply with the provisions of PANS-OPS (Doc 8168), Volume I.*

4.4.9.2 **Recommendation.—** *Noise abatement procedures specified by an operator for any one aeroplane type should be the same for all aerodromes.*

4.5 Duties of pilot-in-command

4.5.1 The pilot-in-command shall be responsible for the safety of all crew members, passengers and cargo on board when the doors are closed. The pilot-in-command shall also be responsible for the operation and safety of the aeroplane from the moment the aeroplane is ready to move for the purpose of taking off until the moment it finally comes to rest at the end of the flight and the engine(s) used as primary propulsion units are shut down.

4.5.2 The pilot-in-command shall ensure that the checklists specified in 4.2.6 are complied with in detail.

4.5.3 The pilot-in-command shall be responsible for notifying the nearest appropriate authority by the quickest available means of any accident involving the aeroplane, resulting in serious injury or death of any person or substantial damage to the aeroplane or property.

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

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

4.5.5 The pilot-in-command shall be responsible for the journey log book or the general declaration containing the information listed in 11.4.1.

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".

4.6 Duties of flight operations officer/ flight dispatcher

4.6.1 A flight operations officer/flight dispatcher in conjunction with a method of control and supervision of flight operations in accordance with 4.2.1.3 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 and ATS flight plans, sign when applicable and file the ATS flight plan with the appropriate ATS unit; and

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

4.6.2 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 the flight, particularly in the context of emergency situations.

4.7 Additional requirements for extended range operations by aeroplanes with two turbine power-units (ETOPS)

4.7.1 Unless the operation has been specifically approved by the State of the Operator, an aeroplane with two turbine power-units shall not, except as provided in 4.7.4, be operated on a route where the flight time at single-engine cruise speed to an adequate en-route alternate aerodrome exceeds a threshold time established for such operations by that State.

Note 1.— Guidance on the value of the threshold time is contained in Attachment E.

Note 2.— In the context of the approval of operations at which the requirements of 5.2.11 can be met, guidance material on adequate and suitable alternate aerodromes is contained in Attachment E.

4.7.2 In approving the operation, the State of the Operator shall ensure that:

a) the airworthiness certification of the aeroplane type;

b) the reliability of the propulsion system; and

c) the operator's maintenance procedures, operating practices, flight dispatch procedures and crew training programmes;

provide the overall level of safety intended by the provisions of Annexes 6 and 8. In making this assessment, account shall be taken of the route to be flown, the anticipated operating conditions and the location of adequate en-route alternate aerodromes.

Note 1.— Guidance on compliance with the requirements of this provision is contained in Attachment E.

Note 2.— The Airworthiness Manual *(Doc 9760) contains guidance on the level of performance and reliability of aeroplane systems intended by 4.7.2, as well as guidance on continuing airworthiness aspects of the requirements of 4.7.2.*

4.7.3 A flight to be conducted in accordance with 4.7.1 shall not be commenced unless, during the possible period of arrival, the required en-route alternate aerodrome(s) will be available and the available information indicates that conditions at those aerodromes will be at or above the aerodrome operating minima approved for the operation.

4.7.4 **Recommendation.—** *The State of the Operator of an aeroplane type with two turbine power-units which, prior to 25 March 1986 was authorized and operating on a route where the flight time at single-engine cruise speed to an adequate en-route alternate aerodrome exceeded the threshold time established for such operations in accordance with 4.7.1 should give consideration to permitting such an operation to continue on that route after that date.*

4.8 Carry-on baggage

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

4.9 Additional requirements for single pilot operations under the instrument flight rules (IFR) or at night

4.9.1 An aeroplane shall not be operated under the IFR or at night by a single pilot unless approved by the State of the Operator.

4.9.2 An aeroplane shall not be operated under the IFR or at night by a single pilot unless:

a) the flight manual does not require a flight crew of more than one;

b) the aeroplane is propeller-driven;

c) the maximum approved passenger seating configuration is not more than nine;

d) the maximum certificated take-off mass does not exceed 5 700 kg;

e) the aeroplane is equipped as described in 6.22; and

f) the pilot-in-command has satisfied requirements of experience, training, checking and recency described in 9.4.5.

CHAPTER 6. AEROPLANE INSTRUMENTS, EQUIPMENT AND FLIGHT DOCUMENTS

Note.— Specifications for the provision of aeroplane communication and navigation equipment are contained in Chapter 7.

6.1 General

6.1.1 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 aeroplanes according to the aeroplane 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.

6.1.2 An aeroplane shall carry a certified true copy of the air operator certificate specified in 4.2.1, and a copy of the operations specifications relevant to the aeroplane 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 4.2.1.5 and 4.2.1.6.

6.1.3 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 aeroplane's compliance with the airworthiness requirements applicable in the State of Registry.

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

6.1.4 The operator shall provide operations staff and flight crew with 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.

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

6.2 All aeroplanes on all flights

6.2.1 An aeroplane shall be equipped with instruments which will enable the flight crew to control the flight path of the aeroplane, carry out any required procedural manoeuvres and observe the operating limitations of the aeroplane in the expected operating conditions.

6.2.2 An aeroplane shall be equipped with:

a) accessible and adequate medical supplies appropriate to the number of passengers the aeroplane is authorized to carry;

Recommendation.— *Medical supplies should comprise:*

1) one or more first-aid kits; and

2) a medical kit, for the use of medical doctors or other qualified persons in treating in-flight medical emergencies for aeroplanes authorized to carry more than 250 passengers.

Note.— Guidance on the types, number, location and contents of the medical supplies is given in Attachment B.

b) portable fire extinguishers of a type which, when discharged, will not cause dangerous contamination of the air within the aeroplane. 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.— Any portable fire extinguisher so fitted in accordance with the certificate of airworthiness of the aeroplane may count as one prescribed.

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.— *The safety harness for each pilot seat should incorporate a device to prevent a suddenly incapacitated pilot from interfering with the flight controls.*

Note.— 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 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) spare electrical fuses of appropriate ratings for replacement of those accessible in flight.

6.2.3 An aeroplane shall carry:

a) the operations manual prescribed in 4.2.3, or those parts of it that pertain to flight operations;

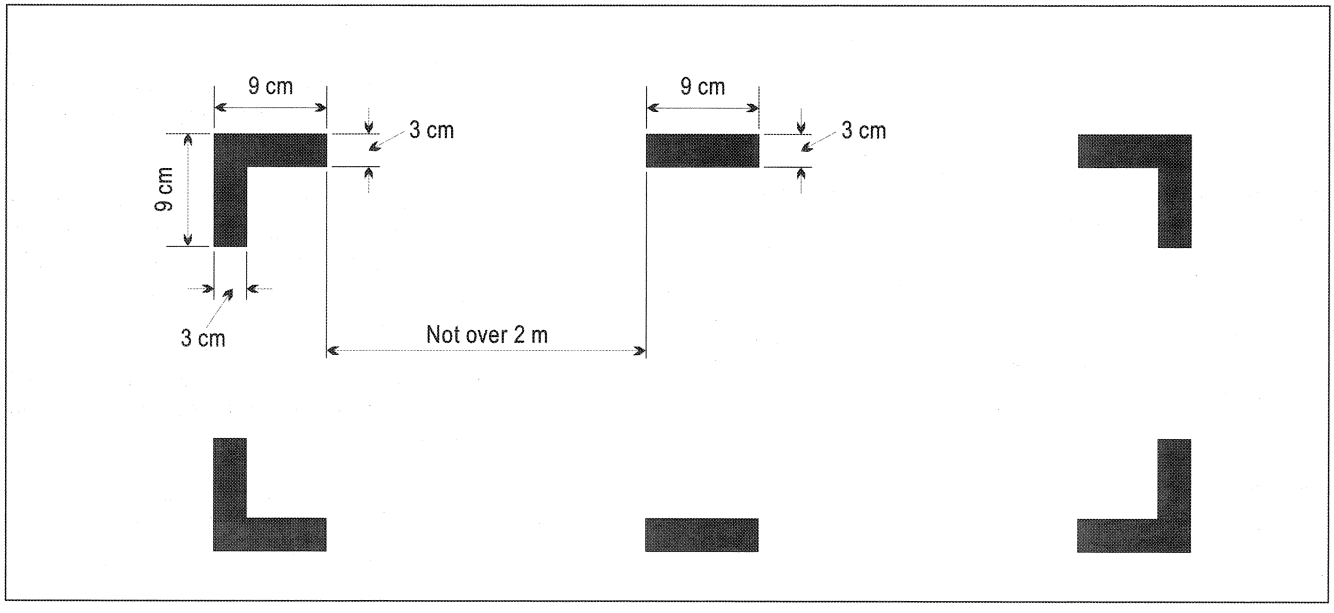
b) the flight manual for the aeroplane, or other documents containing performance data required for the application of Chapter 5 and any other information necessary for the operation of the aeroplane within the terms of its certificate of airworthiness, unless these data are available in the operations 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.

6.2.4 Marking of break-in points

6.2.4.1 If areas of the fuselage suitable for break-in by rescue crews in emergency are marked on an aeroplane 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.

6.2.4.2 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.



MARKING OF BREAK-IN POINTS (see 6.2.4)

CHAPTER 7. AEROPLANE COMMUNICATION AND NAVIGATION EQUIPMENT

7.1 Communication equipment

7.1.1 An aeroplane shall be provided with radio communication equipment capable of:

a) conducting two-way communication for aerodrome 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 7.1.1 are considered fulfilled if the ability to conduct the communications specified therein is established during radio propagation conditions which are normal for the route.

7.1.2 The radio communication equipment required in accordance with 7.1.1 shall provide for communications on the aeronautical emergency frequency 121.5 MHz.

7.1.3 For flights in defined portions of airspace or on routes where an RCP type has been prescribed, an aeroplane shall, in addition to the requirements specified in 7.1.1:

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

b) be authorized by the State of the Operator for operations in such airspace.

Note.— Information on RCP and associated procedures, and guidance concerning the approval process, are contained in the Manual on Required Communications Performance (RCP) *(Doc 9869). This document also contains references to other documents produced by States and international bodies concerning communication systems and RCP.*

7.2 Navigation equipment

7.2.1 An aeroplane 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 the visual flight rules is accomplished by visual reference to landmarks.

7.2.2 For operations where a navigation specification for performance-based navigation has been prescribed, an aeroplane shall, in addition to the requirements specified in 7.2.1:

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

b) be authorized by the State of the Operator for such operations.

Note.— Information on performance-based navigation, and guidance concerning the implementation and operational approval process, are contained in the Performance-based Navigation Manual *(Doc 9613). This document also contains a comprehensive list of references to other documents produced by States and international bodies concerning navigation systems.*

7.2.3 For flights in defined portions of airspace where, based on Regional Air Navigation Agreement, minimum navigation performance specifications (MNPS) are prescribed, an aeroplane shall be provided with navigation equipment which:

a) continuously provides indications to the flight crew of adherence to or departure from track to the required degree of accuracy at any point along that track; and

b) has been authorized by the State of the Operator for the MNPS operations concerned.

Note.— The prescribed minimum navigation performance specifications and the procedures governing their application are published in the Regional Supplementary Procedures *(Doc 7030).*

7.2.4 For flights in defined portions of airspace where, based on Regional Air Navigation Agreement, a reduced vertical separation minimum (RVSM) of 300 m (1 000 ft) is applied between FL 290 and FL 410 inclusive, an aeroplane:

a) shall be provided with equipment which is capable of:

1) indicating to the flight crew the flight level being flown;

2) automatically maintaining a selected flight level;

3) providing an alert to the flight crew when a deviation occurs from the selected flight level. The threshold for the alert shall not exceed ± 90 m (300 ft); and

4) automatically reporting pressure-altitude; and

b) shall be authorized by the State of the Operator for operation in the airspace concerned.

7.2.5 Prior to granting the RVSM approval required in accordance with 7.2.4 b), the State shall be satisfied that:

a) the vertical navigation performance capability of the aeroplane satisfies the requirements specified in Appendix 4;

b) the operator has instituted appropriate procedures in respect of continued airworthiness (maintenance and repair) practices and programmes; and

c) the operator has instituted appropriate flight crew procedures for operations in RVSM airspace.

Note.— An RVSM approval is valid globally on the understanding that any operating procedures specific to a given region will be stated in the operations manual or appropriate crew guidance.

7.2.6 The State of the Operator, in consultation with the State of Registry if appropriate, shall ensure that, in respect of those aeroplanes mentioned in 7.2.4 , adequate provisions exist for:

a) receiving the reports of height-keeping performance issued by the monitoring agencies established in accordance with Annex 11, 3.3.4.1; and

b) taking immediate corrective action for individual aircraft, or aircraft type groups, identified in such reports as not complying with the height-keeping requirements for operation in airspace where RVSM is applied.

7.2.7 All States that are responsible for airspace where RVSM has been implemented, or have issued RVSM approvals to operators within their State, shall establish provisions and procedures which ensure that appropriate action will be taken in respect of aircraft and operators found to be operating in RVSM airspace without a valid RVSM approval.

Note.— These provisions and procedures need to address both the situation where the aircraft in question is operating without approval in the airspace of the State, and the situation where an operator for which the State has regulatory oversight responsibility is found to be operating without the required approval in the airspace of another State.

7.2.8 The aeroplane 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 aeroplane to navigate in accordance with 7.2.1 and where applicable 7.2.2, 7.2.3 and 7.2.4.

Note.— Guidance material relating to aircraft equipment necessary for flight in airspace where RVSM is applied is contained in the Manual on Implementation of a 300 m (1 000 ft) Vertical Separation Minimum Between FL 290 and FL 410 Inclusive *(Doc 9574)*.

7.2.9 On flights in which it is intended to land in instrument meteorological conditions, an aeroplane shall be provided with radio equipment capable of receiving signals providing guidance to a point from which a visual landing can be effected. This equipment shall be capable of providing such guidance for each aerodrome at which it is intended to land in instrument meteorological conditions and for any designated alternate aerodromes.

7.3 Installation

The equipment installation shall be such that the failure of any single unit required for either communications or navigation purposes or both will not result in the failure of another unit required for communications or navigation purposes.

7.4 Electronic navigation data management

7.4.1 An 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 equipment that will use them. The State of the Operator shall ensure that the operator continues to monitor both process and products.

Note.— Guidance relating to the processes that data suppliers may follow is contained in RTCA DO-200A/EUROCAE ED-76 *and* RTCA DO-201A/EUROCAE ED-77.

7.4.2 An operator shall implement procedures that ensure the timely distribution and insertion of current and unaltered electronic navigation data to all aircraft that require it.

CHAPTER 9. AEROPLANE FLIGHT CREW

9.1 Composition of the flight crew

9.1.1 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 aeroplane used, the type of operation involved and the duration of flight between points where flight crews are changed.

9.1.2 Radio operator

The flight crew shall include at least one member who holds a valid licence, issued or rendered valid by the State of Registry, authorizing operation of the type of radio transmitting equipment to be used.

9.1.3 Flight engineer

When a separate flight engineer's station is incorporated in the design of an aeroplane, the flight crew shall include at least one flight engineer especially assigned to that station, unless the duties associated with that station can be satisfactorily performed by another flight crew member, holding a flight engineer licence, without interference with regular duties.

9.1.4 Flight navigator

The flight crew shall include at least one member who holds a flight navigator licence in all operations where, as determined by the State of the Operator, navigation necessary for the safe conduct of the flight cannot be adequately accomplished by the pilots from the pilot station.

9.2 Flight crew member emergency duties

An operator shall, for each type of aeroplane, 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 aeroplane.

9.3 Flight crew member training programmes

9.3.1 An 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 in the type(s) of aeroplane on which the flight crew member serves;

c) include proper flight crew coordination and training in all types of emergency and abnormal situations or procedures caused by power plant, airframe or systems malfunctions, fire or other abnormalities;

d) include training in knowledge and skills related to visual and instrument flight procedures for the intended area of operation, human performance including threat and error management and in the transport of dangerous goods;

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; and

f) be given on a recurrent basis, as determined by the State of the Operator and shall include an assessment of competence.

Note 1.— Paragraph 4.2.5 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 9.2 and 9.3 may be varied and need not be as extensive as the initial training given in a particular type of aeroplane.

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.— Provisions for training in the transport of dangerous goods are contained in Annex 18.

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, Volume I. Criteria for the construction of visual and instrument flight procedures are contained in PANS-OPS, 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 Preparation of an Operations Manual *(Doc 9376).*

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).*

9.3.2 The requirement for recurrent flight training in a particular type of aeroplane 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 9.4.4 in that type of aeroplane.

9.4 Qualifications

Note.— See the Manual of Procedures for the Establishment 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.*

9.4.1 Recent experience — pilot-in-command and co-pilot

9.4.1.1 An 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 aeroplane 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 aeroplane or in a flight simulator approved for the purpose.

9.4.1.2 When a pilot-in-command or a co-pilot is flying several variants of the same type of aeroplane or different types of aeroplanes with similar characteristics in terms of operating procedures, systems and handling, the State shall decide under which conditions the requirements of 9.4.1.1 for each variant or each type of aeroplane can be combined.

9.4.2 Recent experience — cruise relief pilot

9.4.2.1 An operator shall not assign a pilot to act in the capacity of cruise relief pilot in a type or variant of a type of aeroplane unless, within the preceding 90 days that pilot has either:

a) operated as a pilot-in-command, co-pilot or cruise relief pilot on the same type of aeroplane; or

b) carried out flying skill refresher training including normal, abnormal and emergency procedures specific to cruise flight on the same type of aeroplane or in a flight simulator approved for the purpose, and has practised approach and landing procedures, where the approach and landing procedure practice may be performed as the pilot who is not flying the aeroplane.

9.4.2.2 When a cruise relief pilot is flying several variants of the same type of aeroplane or different types of aeroplanes with similar characteristics in terms of operating procedures, systems and handling, the State shall decide under which conditions the requirements of 9.4.2.1 for each variant or each type of aeroplane can be combined.

9.4.3 Pilot-in-command area, route and aerodrome qualification

9.4.3.1 An operator shall not utilize a pilot as pilot-in-command of an aeroplane on a route or route segment for which that pilot is not currently qualified until such pilot has complied with 9.4.3.2 and 9.4.3.3.

9.4.3.2 Each such pilot shall demonstrate to the operator an adequate knowledge of:

a) the route to be flown, and the aerodromes which are to be used. 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

CHAPTER 10. FLIGHT OPERATIONS OFFICER/FLIGHT DISPATCHER

10.1 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.

10.2 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.

10.3 A flight operations officer/flight dispatcher shall not be assigned to duty unless that person has:

a) satisfactorily completed an operator-specific training course that addresses all the specific components of its approved method of control and supervision of flight operations specified in 4.2.1.3;

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 the flight crew compartment of an aeroplane over any area for which that individual is authorized to exercise flight supervision. The flight should include landings at as many aerodromes as practicable;

Note.— For the purpose of the qualification flight, the flight 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 2;

2) the radio equipment in the aeroplanes used; and

3) the navigation equipment in the aeroplanes 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 aeroplanes used;

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

4) the aeroplane loading instructions;

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

f) demonstrated to the operator the ability to perform the duties specified in 4.6.

10.4 **Recommendation.—** *A flight operations officer/ flight dispatcher assigned to duty should maintain complete familiarization with all features of the operation 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).*

10.5 **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 10.2 are met.*

CHAPTER 11. 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 4.2.10

Maintenance records — see 8.4

Flight time records — see 4.2.11.3

Flight preparation forms — see 4.3

Operational flight plan — see 4.3.3.1

Pilot-in-command route and airport qualification records — see 9.4.3.4

11.1 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.

11.2 Operator's maintenance control manual

The operator's maintenance control manual provided in accordance with 8.2, which may be issued in separate parts, shall contain the following information:

a) a description of the procedures required by 8.1.1 including, when applicable:

   1) a description of the administrative arrangements between the operator and the approved maintenance organization;

   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 8.1.4;

c) a reference to the maintenance programme required by 8.3.1;

d) a description of the methods used for the completion and retention of the operator's maintenance records required by 8.4;

e) a description of the procedures for monitoring, assessing and reporting maintenance and operational experience required by 8.5.1;

f) a description of the procedures for complying with the service information reporting requirements of Annex 8, Part II, 4.2.3 f) and 4.2.4;

g) a description of procedures for assessing continuing airworthiness information and implementing any resulting actions, as required by 8.5.2;

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 aircraft types and models to which the manual applies;

k) a description of procedures for ensuring that unserviceabilities affecting airworthiness are recorded and rectified; and

l) a description of the procedures for advising the State of Registry of significant in-service occurrences.

11.3 Maintenance programme

11.3.1 A maintenance programme for each aeroplane as required by 8.3 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 aeroplane;

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 aircraft systems, components and powerplants.

11.3.2 Maintenance tasks and intervals that have been specified as mandatory in approval of the type design shall be identified as such.

11.3.3 **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.*

11.4 Journey log book

11.4.1 **Recommendation.**— *The aeroplane journey log book should contain the following items and the corresponding roman numerals:*

I — *Aeroplane 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, aerial work, scheduled or non-scheduled).*

XI — *Incidents, observations, if any.*

XII — *Signature of person in charge.*

11.4.2 **Recommendation.**— *Entries in the journey log book should be made currently and in ink or indelible pencil.*

11.4.3 **Recommendation.**— *Completed journey log book should be retained to provide a continuous record of the last six months' operations.*

11.5 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 aeroplanes 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.

11.6 Flight recorder records

An operator shall ensure, to the extent possible, in the event the aeroplane 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.

APPENDIX 2. ORGANIZATION AND CONTENTS OF AN OPERATIONS MANUAL

(See Chapter 4, 4.2.3.1)

1. Organization

1.1 **Recommendation.**— *An operations manual, which may be issued in separate parts corresponding to specific aspects of operations, provided in accordance with Chapter 4, 4.2.3.1 should be organized with the following structure:*

a) General;

b) Aircraft operating information;

c) Areas, routes and aerodromes; and

d) Training.

1.2 From 1 January 2006, an operations manual, which may be issued in separate parts corresponding to specific aspects of operations, provided in accordance with Chapter 4, 4.2.3.1 shall be organized with the following structure:

a) General;

b) Aircraft operating information;

c) Areas, routes and aerodromes; and

d) Training.

2. Contents

The operations manual referred to in 1.1 and 1.2 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 Rules limiting the flight time and flight duty periods and providing for adequate rest periods for flight crew members and cabin crew as required by Chapter 4, 4.2.11.2.

2.1.3 A list of the navigational equipment to be carried including any requirements relating to operations where performance-based navigation is prescribed.

2.1.4 Where relevant to the operations, the long-range navigation procedures, engine failure procedure for ETOPS and the nomination and utilization of diversion aerodromes.

2.1.5 The circumstances in which a radio listening watch is to be maintained.

2.1.6 The method for determining minimum flight altitudes.

2.1.7 The methods for determining aerodrome operating minima.

2.1.8 Safety precautions during refuelling with passengers on board.

2.1.9 Ground handling arrangements and procedures.

2.1.10 Procedures, as prescribed in Annex 12, for pilots-in-command observing an accident.

2.1.11 The flight crew for each type of operation including the designation of the succession of command.

2.1.12 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 power-units while en route.

2.1.13 The conditions under which oxygen shall be used and the amount of oxygen determined in accordance with Chapter 4, 4.3.8.2.

2.1.14 Instructions for mass and balance control.

2.1.15 Instructions for the conduct and control of ground de-icing/anti-icing operations.

2.1.16 The specifications for the operational flight plan.

2.1.17 Standard operating procedures (SOP) for each phase of flight.

2.1.18 Instructions on the use of normal checklists and the timing of their use.

2.1.19 Departure contingency procedures.

2.1.20 Instructions on the maintenance of altitude awareness and the use of automated or flight crew altitude call-out.

2.1.21 Instructions on the use of autopilots and auto-throttles in IMC.

2.1.22 Instructions on the clarification and acceptance of ATC clearances, particularly where terrain clearance is involved.

2.1.23 Departure and approach briefings.

2.1.24 Procedures for familiarization with areas, routes and aerodromes.

2.1.25 Stabilized approach procedure.

2.1.26 Limitation on high rates of descent near the surface.

2.1.27 Conditions required to commence or to continue an instrument approach.

2.1.28 Instructions for the conduct of precision and non-precision instrument approach procedures.

2.1.29 Allocation of flight crew duties and procedures for the management of crew workload during night and IMC instrument approach and landing operations.

2.1.30 Instructions and training requirements for the avoidance of controlled flight into terrain and policy for the use of the ground proximity warning system (GPWS).

2.1.31 Policy, instructions, procedures and training requirements for the avoidance of collisions and the use of the airborne collision avoidance system (ACAS).

Note.— Procedures for the operation of ACAS are contained in PANS-OPS (Doc 8168), Volume I, and in PANS-ATM (Doc 4444), Chapters 12 and 15.

2.1.32 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.

2.1.33 For aeroplanes intended to be operated above 15 000 m (49 000 ft):

a) information which will enable the pilot to determine the best course of action to take in the event of exposure to solar cosmic radiation; and

b) procedures in the event that a decision to descend is taken, covering:

1) the necessity of giving the appropriate ATS unit prior warning of the situation and of obtaining a provisional descent clearance; and

2) the action to be taken in the event that communication with the ATS unit cannot be established or is interrupted.

Note.— Guidance material on the information to be provided is contained in Circular 126 — Guidance Material on SST Aircraft Operations.

2.1.34 Details of the accident prevention and flight safety programme provided in accordance with Chapter 3, 3.3, including a statement of safety policy and the responsibility of personnel.

2.1.35 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).

2.1.36 Security instructions and guidance.

2.1.37 The search procedure checklist provided in accordance with Chapter 13, 13.3.

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 Chapter 6, 6.1.4.

2.2.3 Operating instructions and information on climb performance with all engines operating, if provided in accordance with Chapter 4, 4.2.4.3.

2.2.4 Flight planning data for pre-flight and in-flight planning with different thrust/power and speed settings.

2.2.5 The maximum crosswind and tailwind components for each aeroplane type operated and the reductions to be applied to these values having regard to gusts, low visibility, runway surface conditions, crew experience, use of autopilot,

abnormal or emergency circumstances, or any other relevant operational factors.

2.2.6 Instructions and data for mass and balance calculations.

2.2.7 Instructions for aircraft loading and securing of load.

2.2.8 Aircraft systems, associated controls and instructions for their use, as required by Chapter 6, 6.1.4.

2.2.9 The minimum equipment list and configuration deviation list for the aeroplane types operated and specific operations authorized, including any requirements relating to operations where performance-based navigation is prescribed.

2.2.10 Checklist of emergency and safety equipment and instructions for its use.

2.2.11 Emergency evacuation procedures, including type-specific procedures, crew coordination, assignment of crew's emergency positions and the emergency duties assigned to each crew member.

2.2.12 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.

2.2.13 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.

2.2.14 The ground-air visual signal code for use by survivors, as contained in Annex 12.

2.3 Routes and aerodromes

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 Aerodrome operating minima for each of the aerodromes that are likely to be used as aerodromes of intended landing or as alternate aerodromes.

2.3.4 The increase of aerodrome operating minima in case of degradation of approach or aerodrome facilities.

2.3.5 The necessary information for compliance with all flight profiles required by regulations, including but not limited to, the determination of:

a) take-off runway length requirements for dry, wet and contaminated conditions, including those dictated by system failures which affect the take-off distance;

b) take-off climb limitations;

c) en-route climb limitations;

d) approach climb limitations and landing climb limitations;

e) landing runway length requirements for dry, wet and contaminated conditions, including systems failures which affect the landing distance; and

f) supplementary information, such as tire speed limitations.

2.4 Training

2.4.1 Details of the flight crew training programme, as required by Chapter 9, 9.3.

2.4.2 Details of the cabin crew duties training programme as required by Chapter 12, 12.4.

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 Chapter 4, 4.2.1.

Note.— Details of the flight operations officer/flight dispatcher training programme are contained in Chapter 10, 10.2.

APPENDIX 5. SAFETY OVERSIGHT OF AIR OPERATORS

(Note.— See Chapter 4, 4.2.1.8)

1. Primary aviation legislation

1.1 The State of the Operator shall enact and implement laws that enable the State to regulate civil aviation through a Civil Aviation Authority (CAA) or equivalent organization established for that purpose. The legislation shall empower the authority to discharge the oversight responsibilities of the State. The legislation shall provide for the making of regulations, the certification and continued supervision of air operators, and the resolution of safety issues identified by the authority.

Note.— The term authority as used in this Appendix refers to the Civil Aviation Authority as well as equivalent organizations, including inspectors and staff.

1.2 The State of the Operator shall ensure that the laws of the State require air operators to provide the authority with access to their personnel, aircraft, operations and facilities and associated records for the purpose of certification and continued surveillance.

Note.— Guidance on the critical elements of a system that enables a State to discharge its responsibility for inspection, certification and continued surveillance of operations is contained in the Safety Oversight Manual *(Doc 9734), Part A —* The Establishment and Management of a State's Safety Oversight System, *the* Manual of Procedures for Operations Inspection, Certification and Continued Surveillance *(Doc 8335) and the* Airworthiness Manual *(Doc 9760).*

2. Specific operating regulations

2.1 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.

2.2 The State of the Operator shall ensure that its regulations are sufficiently comprehensive, detailed, and current with respect to changes in technology and the operating environment to ensure that satisfactory compliance will result in an acceptable level of safety for the operations undertaken.

3. CAA structure and safety oversight functions

3.1 The State of the Operator shall ensure that the authority is responsible for the safety oversight of air operators and that it has resources appropriate to the size and complexity of civil air operations under the jurisdiction of the State, to effectively discharge the responsibilities of the State.

3.2 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. Technical guidance

4.1 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.

4.2 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.

4.3 The State of the Operator shall ensure that authority inspectors are provided with technical guidance manuals that address ethics, personal conduct, and the avoidance of actual or perceived conflicts of interest in the performance of official duties.

5. Qualified technical personnel

5.1 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.

5.2 **Recommendation.—** *The methodology in 5.1 should be documented.*

5.3 The State of the Operator shall establish qualification requirements to ensure that its inspector personnel have operational or technical work experience and training compatible with those activities they are required to certificate or inspect.

Note.— Guidance on experience and training for inspectors is contained in the Manual of Procedures for Operations Inspection, Certification and Continued Surveillance *(Doc 8335).*

5.4 The State of the Operator shall require authority inspectors to complete initial and recurrent training in relevant technical subjects (including aircraft-specific subjects) and in

skills necessary to effectively accomplish their certification and continued surveillance tasks.

5.5 **Recommendation.**— *The State of the Operator should take the necessary measures, such as remuneration and conditions of service, to ensure that qualified inspectors are recruited and retained.*

6. Licensing and certification obligations

6.1 The State of the Operator shall use a documented process for the certification of air operators that includes thorough technical evaluations that lead to approval or acceptance of procedures, documents and operations as specified in Annex 6, Part I.

6.2 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.

Note.— Attachment F contains further information in this regard.

7. Continued surveillance obligations

7.1 The State of the Operator shall use a documented process for the continued surveillance of air operators to verify the continued validity of the air operator certificates issued by the authority.

7.2 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

8.1 The State of the Operator shall use a documented process to take appropriate corrective actions, up to and including enforcement measures, to resolve identified safety issues.

8.2 The State of the Operator shall ensure that identified safety issues are resolved in a timely manner through a system which monitors and records progress, including actions taken by the air operator, in resolving such issues.

APPENDIX 6. AIR OPERATOR CERTIFICATE (AOC)

(Note. — See Chapter 4, 4.2.1.5 and 4.2.1.6)

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 an operator is authorized.

Note.— Attachment F, 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.— Chapter 6, 6.1.2, requires a certified true copy of the AOC to be carried aboard.

<table>
<tr><th colspan="3">AIR OPERATOR CERTIFICATE</th></tr>
<tr><td rowspan="2">1</td><td>STATE OF THE OPERATOR[2]</td><td rowspan="2">1</td></tr>
<tr><td>ISSUING AUTHORITY[3]</td></tr>
<tr><td>AOC #[4]:
Expiry date[5]:</td><td>OPERATOR NAME[6]

Dba trading name[7]:
Operator address[8]:
Telephone[9]:
Fax:
E-mail:</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. E-mail to be provided if available.*
10. *The contact details include the telephone and fax numbers, including the country code, and the e-mail 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. *Insertion of 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.— Chapter 6, 6.1.2, requires a copy of the operations specifications of this section to be carried aboard.

3.1 For each aircraft model in the operator's fleet, identified by aircraft make, model and series, the following list of authorizations, conditions and limitations 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 authorizations.

Note.— If authorizations 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 4, 4.2.1.6, 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: _____ E-mail: _____

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]:

SPECIAL AUTHORIZATIONS	YES	NO	SPECIFIC APPROVALS[9]	REMARKS
Dangerous goods	☐	☐		
Low visibility operations				
Approach and landing	☐	☐	CAT[10]: _____ RVR: _____ m DH: _____ ft	
Take-off	☐	☐	RVR[11]: _____ m	
RVSM[12] ☐ N/A	☐	☐		
ETOPS[13] ☐ N/A	☐	☐	Maximum diversion time[14]: _____ minutes	
Navigation specifications for PBN operations[15]	☐	☐		16
Continuing airworthiness			17	
Other[18]	☐	☐		

Notes.—

1. *Telephone and fax contact details of the authority, including the country code. E-mail 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 aircraft make, model and series, or master series, if a series has been designated (e.g. Boeing-737-3K2 or Boeing-777-232). 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).*
8. *List the applicable special limitations (e.g. VFR only, day only).*
9. *List in this column the most permissive criteria for each approval or the approval type (with appropriate criteria).*
10. *Insert the applicable precision approach category (CAT I, II, IIIA, IIIB or IIIC). 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. One line per approval may be used if different approvals are granted.*
12. *"Not applicable (N/A)" box may be checked only if the aircraft maximum ceiling is below FL 290.*
13. *Extended range operations (ETOPS) currently applies only to twin-engined aircraft. Therefore the "Not applicable (N/A)" box may be checked if the aircraft model has more than 2 engines. Should the concept be extended to 3 or 4-engined aircraft in the future, the "Yes" or "No" checkbox will be required to be checked.*
14. *The threshold distance may also be listed (in NM), as well as the engine type.*
15. *Performance-based navigation (PBN): one line is used for each PBN specification authorization (e.g. RNAV 10, RNAV 1, RNP 4), with appropriate limitations or conditions listed in the "Specific Approvals" and/or "Remarks" columns.*
16. *Limitations, conditions and regulatory basis for operational approval associated with the performance-based navigation specifications (e.g. GNSS, DME/DME/IRU). Information on performance-based navigation, and guidance concerning the implementation and operational approval process, are contained in the* Performance-based Navigation Manual *(Doc 9613).*
17. *Insert the name of the person/organization responsible for ensuring that the continuing airworthiness of the aircraft 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).*
18. *Other authorizations or data can be entered here, using one line (or one multi-line block) per authorization (e.g. special approach authorization, MNPS, approved navigation performance).*

ATTACHMENT A. FLIGHT TIME AND FLIGHT DUTY PERIOD LIMITATIONS

Supplementary to Chapter 4, 4.2.11.2

1. Purpose and scope

1.1 Flight time and flight duty period limitations are established for the sole purpose of reducing the probability that fatigue of flight crew members may adversely affect the safety of flight.

1.2 In order to guard against this, two types of fatigue must be taken into account, namely, transient fatigue and cumulative fatigue. Transient fatigue may be described as fatigue which is normally experienced by a healthy individual following a period of work, exertion or excitement, and it is normally dispelled by a single sufficient period of sleep. On the other hand cumulative fatigue may occur after delayed or incomplete recovery from transient fatigue or as the after-effect of more than a normal amount of work, exertion or excitement without sufficient opportunity for recuperation.

1.3 Limitations based on the provisions of this Part will provide safeguards against both kinds of fatigue because they will recognize:

1.3.1 The necessity to limit flight time in such a way as to guard against both kinds of fatigue.

1.3.2 The necessity to limit time spent on duty on the ground immediately prior to a flight or at intermediate points during a series of flights in such a way as to guard particularly against transient fatigue.

1.3.3 The necessity to provide flight crew members with adequate opportunity to recover from fatigue.

1.3.4 The necessity of taking into account other related tasks the flight crew member may be required to perform in order to guard particularly against cumulative fatigue.

2. Definitions

2.1 Flight time

The definition of flight time is of necessity very general but in the context of limitations it is, of course, intended to apply to flight crew members in accordance with the relevant definition of a flight crew member. Pursuant to that latter definition, licensed crew personnel travelling as passengers cannot be considered flight crew members, although this should be taken into account in arranging rest periods.

2.2 Flight duty periods

2.2.1 The definition of flight duty period is intended to cover a continuous period of duty which always includes a flight or a series of flights. It is meant to include all duties flight crew members may be required to carry out from the moment they report at their place of employment on the day of a flight until they are relieved of duties, having completed the flight or series of flights. It is considered necessary that this period should be subject to limitations because a flight crew member's activities within the limits of such period would eventually induce fatigue — transient or cumulative — which could endanger the safety of a flight. There is on the other hand (from the point of view of flight safety) insufficient reason to establish limitations for any other time during which flight crew members are performing a task assigned to them by the operator. Such a task should, therefore, only be taken into account when making provisions for rest periods as one among many factors which could lead to fatigue.

2.2.2 The definition does not imply the inclusion of such periods as time taken for a flight crew member to travel from home to the place of employment.

2.2.3 An important safeguard may be established if States and operators recognize the right of a crew member to refuse further flight duty when suffering from fatigue of such a nature as to affect adversely the safety of flight.

2.3 Rest periods

The definition of rest period implies an absence of duty and is intended to be for the purpose of recovering from fatigue; the way in which this recovery is achieved is the responsibility of the individual.

3. Types of limitations

3.1 Limitations are broadly divided by time; for example, the majority of States reporting to ICAO prescribe daily, monthly and yearly flight time limitations, and a considerable number also prescribe quarterly flight time limitations. It will probably be sufficient to prescribe flight duty period limitations on a daily basis. It must be understood, however, that these limitations will vary considerably taking into account a variety of situations.

3.2 In formulating regulations or rules governing flight time limitations, the size of the crew complement and the extent to which the various tasks to be performed can be divided among the crew members should be taken into account; and in the case where adequate facilities for relief are provided in the aircraft in such a way that a crew member may have horizontal rest and a degree of privacy, flight duty periods could be extended. Adequate rest facilities on the ground are required at places where relief periods are to be given. Also, States or operators should give due weight to the following factors: traffic density; navigational and communication facilities; rhythm of work/sleep cycle; number of landings and take-offs; aircraft handling and performance characteristics and weather conditions.

ATTACHMENT F. AIR OPERATOR CERTIFICATION AND VALIDATION

Supplementary to Chapter 4, 4.2.1

1. Purpose and scope

1.1 Introduction

The purpose of this Attachment is to provide guidance concerning actions required by States in connection with the operator certification requirements in Chapter 4, 4.2.1, particularly the means of accomplishing and recording those actions.

1.2 Prior certification required

In accordance with Standard 4.2.1.3, the issuance of an air operator certificate (AOC) is "dependent upon the operator demonstrating" to the State that its organization, training policy and programmes, flight operations, ground handling 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 4.2.1.8 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 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 approvals or acceptances depending on the nature of the response by the State to the matter submitted for its review.

2.1.2 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.

2.1.3 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.

2.1.4 The phrase "approved by the State" or similar phrases using the word "approval" are frequently used in Annex 6, Part I. Provisions indicating a review and implying approval or at least "acceptance" by the State occur even more frequently in Annex 6, Part I. In addition to these specific phrases, Annex 6, Part I, 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.

2.1.5 The State should make or arrange for a technical safety evaluation before issuing the 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 before issuance of some approvals

2.2.1 Standard 4.2.1.3 obligates the State of the Operator, prior to certification of an 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 approvals required by

Annex 6, Part I, such as approval for Category III operations, have significant safety implications and should be validated by demonstration before the State approves 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, 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 approval or acceptance action was issued. These instruments are unambiguous evidence of the authorizations held by an 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, 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 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 approval or acceptance in Annex 6, Part I, will require an operations evaluation and an airworthiness evaluation. Low minima approvals for the conduct of Category II and III ILS approaches, 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 approval is issued.

2.5 State of the Operator and State of Registry responsibilities

2.5.1 Annex 6, Part I, 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 I, also requires the State of the Operator to consider or act in accordance with various 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 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* Guidance on the Implementation of Article 83 *bis* of the Convention on International Civil Aviation *(Cir 295).*

3. Approval actions

3.1 Approvals

The term "approval" implies 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.

3.2 Air operator certificate (AOC)

3.2.1 The AOC required by Annex 6, Part I, Chapter 4, 4.2.1, is a formal instrument. Chapter 4, 4.2.1.5, lists the information to be included in the AOC.

3.2.2 In addition to the items in Appendix 6, paragraph 3, operations specifications may include other specific authorizations, such as:

a) special aerodrome operations (e.g. short take-off and landing operations or land and hold short operations);

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) single-engine passenger transport at night or in instrument meteorological conditions; and

d) operations in areas with special procedures (e.g. operations in areas using different altimetry units or altimeter setting procedures).

3.3 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.

a) **Configuration deviation list (CDL) (Definitions);

b) **Master minimum equipment list (MMEL) (Definitions);

c) The method for establishing minimum flight altitudes (4.2.7.3);

d) The method of determining aerodrome operating minima (4.2.8.1);

e) Additional requirements for single pilot operations under the instrument flight rules (IFR) at night (4.9.1);

f) Flight time, flight duty periods and rest periods (4.2.11.2);

g) Specific extended range operations (4.7.1);

h) Additional requirements for operations of single-engine turbine-powered aeroplanes at night and/or in instrument meteorological conditions (IMC) (5.4.1);

i) Aircraft-specific minimum equipment list (MEL) (6.1.3);

j) Performance-based navigation operations (7.2.2 b));

k) MNPS operations (7.2.3 b));

l) RVSM operations (7.2.4 b));

m) Procedures for electronic navigation data management (7.4.1);

n) *Aircraft-specific maintenance programme (8.3.1);

o) *Approved maintenance organization (8.7.1.1);

p) *Maintenance quality assurance methodology (8.7.4.1);

q) Flight crew training programmes (9.3.1);

r) Training in the transport of dangerous goods (9.3.1, Note 5);

s) Aerodrome additional safety margin (9.4.3.3 a));

t) Pilot-in-command area, route and aerodrome qualifications (9.4.3.5);

u) Use of flight simulation training devices (9.3.1, Note 2 and 9.4.4, Note 1);

v) Method of control and supervision of flight operations (4.2.1.3 and 10.1);

w) **Mandatory maintenance tasks and intervals (11.3.2);

x) Cabin attendant training programmes (12.4).

3.4 Provisions that require a technical evaluation

Other provisions in Annex 6, Part I, 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 aircraft-specific checklists (Definition: aircraft operating manual and 6.1.4);

b) details of the aircraft-specific systems (Definition: aircraft operating manual and 6.1.4);

c) mandatory material for the operations manual (4.2.3.2/ Appendix 2);

d) engine trend monitoring systems (5.4.2);

e) equipment for aeroplanes operated by a single pilot under the instrument flight rules or at night (6.22);

f) requirements for approval to operate in RVSM airspace (7.2.5);

g) monitoring of height-keeping performance of aeroplanes approved to operate in RVSM airspace (7.2.6);

h) procedures for distribution and insertion of electronic navigation data in aircraft (7.4.2);

i) *operator's aircraft-specific maintenance responsibilities (8.1.1);

j) *method of maintenance and release (8.1.2);

k) *maintenance control manual (8.2.1);

l) *mandatory material for the maintenance control manual (8.2.4);

m) *reporting of maintenance experience information (8.5.1);

n) *implementing necessary maintenance corrective actions (8.5.2);

o) *modification and repair requirements (8.6);

p) *minimum competence level of maintenance personnel (8.7.6.3);

q) requirement for flight navigator (9.1.4);

r) training facilities (9.3.1);

s) qualifications of instructors (9.3.1);

t) need for recurrent training (9.3.l);

u) use of correspondence courses and written examinations (9.3.1, Note 4);

v) use of flight simulation training devices (9.3.2);

w) flight crew qualification records (9.4.3.4);

x) designated representative of the State of the Operator (9.4.4);

y) pilot experience, recency and training requirements for single pilot operations under the instrument flight rules (IFR) or at night (9.4.5.1 and 9.4.5.2);

z) *flight manual changes (11.1);

aa) minimum number of flight attendants assigned to a specific aircraft (12.1);

bb) altimetry system performance requirements for operations in RVSM airspace (Appendix 4, 1 and 2);

Single-engine operations

cc) turbine engine reliability for approved operations by single-engine turbine-powered aeroplanes at night and/or in instrument meteorological conditions (IMC) (Appendix 3, 1.1);

dd) systems and equipment (Appendix 3, 2);

ee) minimum equipment list (Appendix 3, 3);

ff) flight manual information (Appendix 3, 4);

gg) event reporting (Appendix 3, 5);

hh) operator planning (Appendix 3, 6);

ii) flight crew experience, training and checking (Appendix 3, 7);

jj) route limitations over water (Appendix 3, 8); and

kk) operator certification or validation (Appendix 3, 9).

4. Acceptance actions

4.1 Acceptance

4.1.1 The actual extent of the State's technical evaluation of an 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 an operator will be in compliance with all requirements of Annex 6, Part I, prior to conducting international commercial air transport operations.

4.1.2 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.

4.2 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 and the *Airworthiness Manual* (Doc 9760), Volume I, 6.2.1 c) 4). 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.

4.3 Operations and maintenance manuals

4.3.1 Operations and maintenance manuals, and any subsequent amendments should be submitted to the State (4.2.3.2, 8.1.1, 8.2.4, 8.3.2, and 8.7.2.3). The State also establishes minimum contents for these manuals (11.2, 11.3, 11.4 and Appendix 2). The pertinent portions of an operator's manual for evaluation should be identified in the State's technical guidance, e.g. operations policy manual, operating manual, cabin crew manual, route guide, and training manual. Some States issue a formal instrument accepting each manual and any subsequent amendments.

4.3.2 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 2, 2.1.16) should provide the step-by-step completion guidance necessary for compliance with 4.3 concerning the content and retention of these plans.

4.3.3 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.

5. Other approval or acceptance considerations

Some States provide for approval or acceptance of certain critical documents, records or procedures specified in Annex 6, Part I, although the relevant Annex 6 Standards do not require approval or acceptance by the State of the Operator. The following are some examples:

a) safety programme (3.3.1);

b) flight data analysis programme (3.3.7);

c) method for obtaining aeronautical data (4.1.1);

d) adequacy of the fuel and oil records (4.2.10);

e) adequacy of flight time, flight duty and rest period records (4.2.11.3, 9.6, and 12.5);

f) adequacy of the aircraft maintenance log book (4.3.1 a), b), and c));

g) adequacy of the load manifest (4.3.1 d), e) and f));

h) adequacy of the operational plan (4.3.1 g));

i) method for obtaining weather data (4.3.5.1 and 4.3.5.2);

j) method of compliance with carry-on baggage stowage (4.8);

k) aeroplane performance operating limitations (5.2.4);

l) method of obtaining and applying aerodrome obstacle data (5.3);

m) adequacy of passenger information cards (6.2.2 d));

n) procedures for long-range navigation (7.2.1 b));

o) contents of the journey log book (11.4.1); and

p) content of the security training programme (13.4).

6. Validation of the standard of operations

Standard 4.2.1.4 requires that the validity of an AOC shall depend upon the operator maintaining the original certification standards (4.2.1.3) 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 (4.2.1.9). 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.

7. Amendment of air operator certificates

The certification of an 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 an 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.