AUA-OPS2(A)

Regulations for international general aviation operations with Aruban registered aeroplanes

FOREWORD

1. International General Aviation Aeroplanes – AUA-OPS2(A) - is applicable for the operations of Aruban Aeroplanes in the general aviation. For operations regulations in the general aviation for helicopters see AUA-OPS 2 General Aviation (helicopters) – AUA-OPS 2-(H).

2. The Minister in charge of aviation affairs, through the Department of Civil Aviation of Aruba, is known in these regulations as the "Authority".

3. AUA-OPS2(A) addresses General Aviation provisions for aeroplanes established in ICAO Annex 6, Part II.

4. Notes included in the text, where appropriate, give factual information or references bearing on the provisions in question but not constituting part of the provisions.

5. The AUA-OPS2(A) shall be applicable for Aruban registered Aeroplanes as of the day after its signing.

Date, 10 July 2023

ing. Edwin Kelly, MBA
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REVISION HISTORY

Amendments/revision of this regulation are recorded below in order of the most recent first

REVISION NO.	EFFECTIVE DATE	AMENDED OR REVISED PROVISIONS
Revision 1	2023	This revision covers provision as established in Annex 6 Part II — International General Aviation — Aeroplanes (Eleventh Edition, July 2022, Amendment 40)

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SECTION 1 GENERAL

OPS2(A)-1.0 Abbreviations and symbols

AC	Alternating current
ACAS	Airborne collision avoidance system
ADREP	Accident/incident reporting
ADRS	Aircraft data recording system
ADS	Automatic dependent surveillance
AFCS	Automatic flight control system
AIR	Airborne image recorder
AIRS	Airborne image recording system
AOC	Air operator certificate
APCH	Approach
APU	Auxiliary power unit
AR	Authorization required
ARINC	Aeronautical Radio, Incorporated
ASE	Altimetry system error
ATC	Air traffic control
ATM	Air traffic management
ATN	Aeronautical telecommunication network
ATS	Air traffic services
CARS	Cockpit audio recording system
CAT I	Category I
CAT II	Category II
CAT III	Category III
CFIT	Controlled flight into terrain
CG	Centre of gravity
cm	Centimetre
CPDLC	Controller-pilot data link communications
CVR	Cockpit voice recorder
CVS	Combined vision system
DA	Decision altitude
DA/H	Decision altitude/height
DC	Direct current
D-FIS	Data link-flight information services
DH	Decision height
DLR	Data link recorder
DLRS	Data link recording system
DME	Distance measuring equipment
DSTRK	Desired track

EFB	Electronic flight bag
EFIS	Electronic flight instrument system
EGT	Exhaust gas temperature
EICAS	Engine indication and crew alerting system
ELT	Emergency locator transmitter
ELT(AD)	Automatic deployable ELT
ELT(AF)	Automatic fixed ELT
ELT(AP)	Automatic portable ELT
ELT(S)	Survival ELT
EPR	Engine pressure ratio
EUROCAE	European Organisation for Civil Aviation Equipment
EVS	Enhanced vision system
FANS	Future air navigation system
FDR	Flight data recorder
FL	Flight level
FM	Frequency modulation
ft	Foot
ft/min	Feet per minute
g	Normal acceleration
GBAS	Ground-based augmentation system
GCAS	Ground collision avoidance system
GLS	GBAS landing system
GNSS	Global navigation satellite system
GPS	Global positioning system
GPWS	Ground proximity warning system
hPa	Hectopascal
HUD	Head-up display
IAOPA	International Council of Aircraft Owner and Pilot Associations
IBAC	International Business Aviation Council
IFR	Instrument flight rules
ILS	Instrument landing system
IMC	Instrument meteorological conditions
inHg	Inch of mercury
INS	Inertial navigation system
ISA	International standard atmosphere
kg	Kilogram
km	Kilometre
km/h	Kilometres per hour
kt	Knot

lbf	Pound-force
LED	Light emitting diode
m	Metre
mb	Millibar
m/s	Metres per second
MDA	Minimum descent altitude
MDA/H	Minimum descent altitude/height
MDH	Minimum descent height
MEL	Minimum equipment list
MHz	Megahertz
MLS	Microwave landing system
MMEL	Master minimum equipment list
MNPS	Minimum navigation performance specification
MOPS	Minimum operational performance specification
NAV	Navigation
NM	Nautical mile
NVIS	Night vision imaging systems
N_1	Low pressure compressor speed (two-stage compressor); fan speed (three-stage compressor)
N_2	High pressure compressor speed (two-stage compressor); intermediate pressure compressor (three-stage compressor)
N_3	High pressure compressor speed (three-stage compressor)
OCA	Obstacle clearance altitude
OCA/H	Obstacle clearance altitude/height
OCH	Obstacle clearance height
PANS	Procedures for Air Navigation Services
PBC	Performance-based communication
PBN	Performance-based navigation
PBS	Performance-based surveillance
RCP	Required communication performance
RFFS	Rescue and fire-fighting services
RNAV	Area navigation
RNP	Required navigation performance
RNPSOR	Required navigation performance and special operational requirements
RSP	Required surveillance performance
RTCA	Radio Technical Commission for Aeronautics
RVR	Runway visual range
RVSM	Reduced vertical separation minima

SBAS	Satellite-based augmentation system
SI	International System of Units
SOP	Standard operating procedure
SVS	Synthetic vision system
TAWS	Terrain awareness system
TCAS	Traffic alert and collision avoidance system
TLA	Thrust lever angle
TLS	Target level of safety
TVE	Total vertical error
UTC	Coordinated universal time
V_D	Design diving speed
V_{S0}	Stalling speed or the minimum steady flight speed in the landing configuration
VFR	Visual flight rules
VMC	Visual meteorological conditions
VOR	VHF omnidirectional radio range
VSM	Vertical separation minima
WXR	Weather radar

Symbols

°C	Degrees Celsius
%	Per cent

OPS2(A)-1.1 Definitions

When the following terms are used in the AUA-OPS2(A) provisions for the operation of aeroplanes in international general aviation, they shall have the following meanings:

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

- unlawful seizure of aircraft in flight,
- unlawful seizure of aircraft on the ground,
- hostage-taking on board an aircraft or on aerodromes,
- forcible intrusion on board an aircraft, at an airport or on the premises of an aeronautical facility,
- introduction on board an aircraft or at an airport of a weapon or hazardous device or material intended for criminal purposes,

— communication of false information as to jeopardize the safety of an aircraft in flight or on the ground, of passengers, crew, ground personnel or the general public, at an airport or on the premises of a civil aviation facility.

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

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

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

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

a) take-off, expressed in terms of runway visual range and/or visibility and, if necessary, cloud conditions;
b) landing in 2D instrument approach operations, expressed in terms of visibility and/or runway visual range minimum descent altitude/height (MDA/H) and, if necessary, cloud conditions; and
c) landing in 3D instrument approach operations, expressed in terms of visibility and/or runway visual range and decision altitude/height (DA/H) as appropriate to the type and/or category of the operation.

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

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

Note.— The other State in the above definition refers to the State of the principal location of a general aviation operator.

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

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

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

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

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

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

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

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

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

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

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

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

Authority. The Minister in charge of aviation affairs, through the Department of Civil Aviation of Aruba, is known in these regulations as the “Authority”.

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

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

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

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

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

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

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

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

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

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

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

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

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

relation to the desired flight path. In Category III operations with a decision height the required visual reference is that specified for the particular procedure and operation.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Note.— Non-precision approach procedures may be flown using a continuous descent final approach (CDFA) technique. CDFAs with advisory vertical navigation (VNAV) guidance calculated by on-board equipment are considered 3D instrument approach operations. CDFAs with manual calculation of the required rate of descent are considered 2D instrument approach operations.

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

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

Note.— Refer to Section 2, Chapter 2.2, OPS2(A)-2.2.2.2.2, for instrument approach operation types.

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

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

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

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

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

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

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

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

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

* As defined in Annex 2.

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

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

Note 2.— The required visual reference means that section of the visual aids or of the approach area which should have been in view for sufficient time for the pilot to have made an assessment of the aircraft position and rate of change of position, in relation to the desired flight path. In the case of a circling approach the required visual reference is the runway environment.

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

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

Note.— A modification may also include the embodiment of the modification which is a maintenance task subject to a maintenance release.

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

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

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

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

Night. The hours between sunset and sunrise.

Note: Definition of sunset and sunrise are established in Landsbesluit Luchtverkeer (AB 2008 no. 44).

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

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

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

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

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

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

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

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

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

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

Note.— In the context of AUA-OPS 2, the operator is not engaged in the transport of passengers, cargo or mail for remuneration or hire.

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

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

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

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

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

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

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

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

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

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

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

Note 1.—: This definition is identical to commander.

Note 2— For the purpose of non-commercial air transport operations where no operator exists, the term operator in this definition is taken to be the aircraft owner.

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

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

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

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

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

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.

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

Note.— The terms authorization, specific approval, approval and acceptance are further described in Attachment 11.

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

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

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

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

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

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

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

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

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

[*] As defined in Annex 2.

OPS2(A)-1.2 Applicability

The requirements contained in AUA-OPS 2 (A) shall be applicable to international general aviation operations with aeroplanes registered in Aruba, as described in Section 2 and Section 3.

OPS2(A)-1.3 Exemptions

The Authority may exceptionally grant an exemption from the provisions of AUA-OPS 2 (A) where all of the following conditions have been met:

(a) it is not possible to adequately address those circumstances or needs in compliance with the applicable requirement;

(b) safety, environmental protection and compliance with the applicable essential requirements are ensured, where necessary through the application of mitigation measures/supplementary measures as established by the Authority;

(c) the exemption is limited in scope and duration to the extent strictly necessary.

Note. Exemptions will be applied in a non-discriminatory manner.

SECTION 2 GENERAL AVIATION OPERATIONS

CHAPTER 2.1 GENERAL

OPS2(A)-2.1.1 Compliance with laws, regulations and procedures

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

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

(c) The pilot-in-command shall have responsibility for operational control.

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

(e) For international flight, the pilot-in-command shall have available on board the aeroplane the essential information concerning the search and rescue services in the area over which the aeroplane will be flown.

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

OPS2(A)-2.1.2 Dangerous Goods

(a) The transport of dangerous goods by air shall be conducted in accordance with Annex 18 to the Chicago Convention as last amended and amplified by the Technical

Instructions for the Safe Transport of Dangerous Goods by Air (ICAO Doc 9284-AN/905), including its supplements and any other addenda or corrigenda.

(b) Dangerous goods shall only be transported by the operator approved in accordance with national regulations by the Authority except when;

(1) they are not subject to the Technical Instructions in accordance with Part 1 of those Instructions; or

(2) they are carried by passengers or the pilot-in-command, or are in baggage, in accordance with Part 8 of the Technical Instructions.

(c) The pilot-in-command shall take all reasonable measures to prevent dangerous goods from being carried on board inadvertently.

(d) The pilot-in-command shall, in accordance with the Technical Instructions, report without delay to the Authority and the appropriate authority of the State of occurrence in the event of any dangerous goods accidents or incidents.

(e) The pilot-in-command shall ensure that passengers are provided with information about dangerous goods in accordance with the Technical Instructions.

OPS2(A)-2.1.3 Use of psychoactive substances

(a) Flight crewmembers shall not exercise the privileges of their licenses and related ratings while under the influence of any psychoactive substances, which might render them unable to safety and properly exercise these privileges.

(b) Flight crewmembers shall not engage in any problematic use of substances.

(c) Cabin crewmembers and any other person whose function is critical the safety of aviation (safety-sensitive personnel) shall not exercise their assigned duties while under the influence of any psychoactive substances, which might render them unable to safety and properly exercise these privileges.

(d) No such person as mentioned in (c) shall engage in any kind of problematic use of substances.

(e) The operator shall develop and implement a policy on the prevention and detection of psychoactive substances by flight any safety sensitive personnel under their control. Any licensed crewmember or licensed operations personnel who is identified in being engaged in any kind of problematic use of substances shall be removed from their safety-critical functions immediately. Return to the safety-critical functions may be considered after successful treatment or, in cases where no treatment is necessary, after cessation of the problematic use of substances and

upon determination that the person's continued performance of the function is unlikely to jeopardize safety.

(f) Private or corporate operators shall introduce a suitable method of identification, which may include biochemical testing on such occasions as pre-employment, upon reasonable suspicion, after accidents/incidents, at intervals, and at random.

(g) Positive identification of psychoactive substances shall be reported to the authority within 48 hours.

OPS2(A)-2.1.4 Specific approvals

(a) A pilot-in-command/operator shall not operate an aircraft for the purpose of General Aviation or Aerial Work operations otherwise than under, and in accordance with, the approvals and limitations of Specific Approvals issued for that aircraft.

(b) The pilot-in-command shall not conduct operations for which a specific approval is required unless such approval has been issued by the Authority. Specific approval is required among other for:

1) Low Visibility Operations;
2) Operational credit for use of HUD/EVS;
3) Performance Based Operations (PBN);
4) Carriage of Dangerous Goods;
5) Use of EFB (installed or portable);
6) Use of CPDLC;
7) Use of ADS-B Out;
8) Use of ADS C;
9) Required Communications Performance (RCP), and
10) Required Surveillance Performance (RSP)

Note.— The list of specific approvals is only a sample and not an exhaustive list of possible special approvals.

(c) Specific Approvals shall follow the layout and contain at least the information listed in Attachment 1.

OPS2(A)-2.1.5 Documents to be carried on board

The pilot-in-command shall ensure that the aircraft, engaged in international operations, carries the following documents in conformity with the conditions prescribed in the Convention:

a) Its certificate of registration;
b) Its certificate of airworthiness;

c) The appropriate licenses for each member of the crew
d) Its journey log book;
e) If it is equipped with radio apparatus, the aircraft radio station license
f) If it carries passengers, a list of their names and places of embarkation and destination;
g) If it carries cargo, a manifest and detailed declarations of the cargo.
h) specific approvals, if applicable;
i) Document attesting noise certification(if applicable);
j) The valid aircraft and third-party liability insurance certificates(s);

CHAPTER 2.2 FLIGHT OPERATIONS

2.2.1 Operating facilities

OPS2(A)-2.2.1 Operating facilities

(a) The pilot-in-command shall ensure that a flight will not be commenced unless it has been ascertained by every reasonable means available that the ground and/or water facilities including communication facilities and navigation aids available and directly required on such flight, for the safe operation of the aeroplane, are adequate for the type of operation under which the flight is to be conducted.

Note 1.— "Reasonable means" in this document is intended to denote the use, at the point of departure, of information available to the pilot-in-command either through official information published by the aeronautical information services or readily obtainable from other sources.

Note 2.— *In making a decision on the adequacy of facilities and services available at an aerodrome of intended operation, as specified in (a), it is prudent to asses also the level of safety risk associated with the aircraft type and nature of the operation, in relation to the availability of rescue and fire-fighting services (RFFS).*

2.2.2 Operational management

2.2.2.1 Operating instructions

OPS2(A)-2.2.2.1 Operating instructions-general

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

(a) is an appropriately qualified pilot or:

(b) has been duly authorized by the owner, or in the case it is leased, the lessee, or a designated agent, and;

(1) is trained and fully competent to taxi the aeroplane;
(2) is trained and qualified to use the radio, if radio communications are required;
(3) has received instruction in respect of aerodrome layout, and where appropriate, information on routes, signs, marking, lights, air traffic control (ATC) signals and instructions, phraseology and procedures; and
(4) is able to conform to the operational standards required for safe aeroplane movement at the aerodrome.

2.2.2.2 Aerodrome operating Minima

OPS2(A)-2.2.2.2.1 Aerodrome operating minima

(a) The pilot-in-command shall establish aerodrome operating minima in accordance with criteria specified in (b), for each aerodrome to be used in operations. When establishing aerodrome operating minima, any conditions that may be prescribed in the list of specific approvals shall be observed. Such minima shall not be lower than any that may be established for such aerodromes by the State of the Aerodrome, except when specifically approved by that State.

(b) The aerodrome operating minima shall take the following elements into account, if relevant:

(1) the type, performance, and handling characteristics of the aircraft;
(2) the equipment available on the aircraft for the purpose of navigation, acquisition of visual references, and/or control of the flight path during take-off, approach, landing, and missed approach;
(3) any conditions or limitations stated in the aircraft flight manual (AFM);
(4) the dimensions and characteristics of the runways/final approach and take-off areas (FATOs) that may be selected for use;
(5) the adequacy and performance of the available visual and non-visual aids and infrastructure;
(6) the obstacle clearance altitude/height (OCA/H) for the instrument approach procedures (IAPs), if established;
(7) the obstacles in the climb-out areas and clearance margins;
(8) the competence and relevant operational experience of the pilot-in-command;
(9) the IAP, if established;
(10) the aerodrome characteristics and the type of air navigation services (ANS) available, if any;
(11) any minima that may be promulgated by the State of the aerodrome;
(12) the conditions prescribed in any specific approvals for low-visibility operations (LVOs) or operations with operational credits.

OPS2(A)-2.2.2.2.1.1 Operational Credits

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

Note 1.— Operational credit includes:

a) for the purposes of an approach ban (OPS2(A)-2.2.4.1.2), or a dispatch consideration, a minimum below the aerodrome operating minima;

b) reducing or satisfying the visibility requirements; or
c) requiring fewer ground facilities as compensated for by airborne capabilities.

Note 2.— Further guidance can be found in document Manual of All-Weather Operations (Doc 9365).

OPS2(A)-2.2.2.2.1.2 Specific approval for operating credit

To qualify to receive a specific approval for the operational credit, the Operator shall demonstrate to the authority that:

a) the aeroplane meets the appropriate airworthiness certification requirements;
b) the information necessary to support effective crew tasks for the operation is appropriately available to both pilots where the number of flight crew members specified in the operations manual is more than one;
c) the operator/owner has carried out a safety risk assessment of the operations supported by the equipment;
d) the operator/owner has established and documented normal and abnormal procedures and MEL;
e) the operator/owner has established a training programme for the flight crew members and relevant personnel involved in the flight preparation;
f) the operator/owner has established a system for data collection, evaluation and trend monitoring for low visibility operations for which there is an operational credit; and
g) the operator/owner has instituted appropriate procedures with respect to continuing airworthiness (maintenance and repair) practices and programmes.

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

Note 2.— Further guidance can be found in document AMC-035..

OPS2(A)-2.2.2.2.1.3 Operations with operational credit

Operations with operational credit with minima above those related to low visibility operations, are only allowed after receiving and approval of the authority. The Operator shall comply with all criteria for the safe operation of the aeroplane established by the authority.

Note.— Further guidance can be found in document AMC-035.

OPS2(A)-2.2.2.2.2 Classification of Instrument approach operations

Instrument approach operations shall be classified based on the designed lowest operating minima below which an approach operation shall only be continued with the required visual reference as follows:

a) Type A: an instrument approach operation with a minimum descent height or decision height at or above 75 m (250 ft); and

b) Type B: an instrument approach operation with a decision height below 75 m (250 ft). Type B instrument approach operations are categorized as:
   1) Category I (CAT I): a decision height not lower than 60 m (200 ft) and with either a visibility not less than 800 m or a runway visual range not less than 550 m;
   2) Category II (CAT II): a decision height lower than 60 m (200 ft) but not lower than 30 m (100 ft) and a runway visual range not less than 300 m;
   3) Category III (CAT III): a decision height lower than 30 m (100 ft) or no decision height and a runway visual range less than 300 m or no runway visual range limitations.

Note 1.— Where decision height (DH) and runway visual range (RVR) fall into different categories of operation, the instrument approach operation would be conducted in accordance with the requirements of the most demanding category (e.g. an operation with a DH in the range of CAT III but with an RVR in the range of CAT III would be considered a CAT III operation or an operation with a DH in the range of CAT II but with an RVR in the range of CAT I would be considered a CAT II operation). This does not apply if the RVR and/or DH has been approved as operational credits.

Note 2.— The required visual reference means that section of the visual aids or of the approach area which should have been in view for sufficient time for the pilot to have made an assessment of the aircraft position and rate of change of position, in relation to the desired flight path. In the case of a circling approach operation, the required visual reference is the runway environment.

OPS2(A)-2.2.2.2.3 Operating minima for 2D instrument

The operating minima for 2D instrument approach operations using instrument approach procedures shall be determined by establishing a minimum descent altitude (MDA) or minimum descent height (MDH), minimum visibility and, if necessary, cloud conditions.

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

OPS2(A)-2.2.2.2.4 Operating minima for 3D instrument

The operating minima for 3D instrument approach operations using instrument approach procedures shall be determined by establishing a decision altitude (DA) or decision height (DH) and the minimum visibility or RVR.

OPS2(A)-2.2.2.2.5 Approval instrument approach operations in low visibility conditions

The pilot-in-command/operator shall only conduct instrument approach operations in low visibility conditions when approved by the Authority. Instrument approach operations in low visibility shall only be conducted when RVR information is provided.

Note.— Guidance on low visibility operations is contained AMC 035.

OPS2(A)-2.2.2.2.6 Approval take-off operations in low visibility

The operator shall only conduct low visibility take-off operations (LVTO), when the Authority has issued a specific approval for the minimum take-off RVR.

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

2.2.2.3 Passenger Briefing

OPS2(A)-2.2.2.3.1 Passenger briefing

The pilot-in-command shall ensure 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; and
e) other emergency equipment provided for individual use, including passenger emergency briefing cards.

OPS2(A)-2.2.2.3.2 Passenger briefing (Cont.)

The pilot-in-command shall ensure that that all persons on board are aware of the location and general manner of use of the principal emergency equipment carried for collective use.

OPS2(A)-2.2.2.3.3 Passenger briefing (Cont).

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

OPS2(A)-2.2.2.3.4 Passenger briefing (Cont).

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

2.2.3 Flight preparation

OPS2(A)-2.2.3.1 Flight preparation

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

a) the aeroplane is airworthy, duly registered and that appropriate certificates with respect thereto are aboard the aeroplane;
b) the instruments and equipment installed in the aeroplane are appropriate, taking into account the expected flight conditions;
c) any necessary maintenance has been performed in accordance with Chapter 2.6;
d) the mass of the aeroplane and centre of gravity location are such that the flight can be conducted safely, taking into account the flight conditions expected;
e) any load carried is properly distributed and safely secured; and
f) the aeroplane operating limitations, contained in the flight manual, or its equivalent, will not be exceeded.

OPS2(A)-2.2.3.2

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2.2.3.3 Flight planning

OPS2(A)-2.2.3.3 Flight planning

Before commencing a flight, the pilot-in-command shall be familiar with all available meteorological information appropriate to the intended flight. Preparation for a flight away from the vicinity of the place of departure, and for every flight under the instrument flight rules, shall include:

a) a study of available current weather reports and forecasts; and
b) the planning of an alternative course of action to provide for the eventuality that the flight cannot be completed as planned, because of weather conditions.

2.2.3.4 Meteorological conditions

OPS2(A)-2.2.3.4.1 Meteorological conditions - VFR

The pilot-in-command shall only commence or continue a VFR flight if the latest available meteorological reports or a combination of current reports and forecasts indicates that the meteorological conditions along the route or that part of the route to be flown under VFR will, at the appropriate time, be such as to enable compliance with applicable VFR operating minima.

OPS2(A)-2.2.3.4.2 Meteorological conditions - IFR

A flight to be conducted in accordance with the instrument flight rules, the pilot-in-command shall not:

a) take off from the departure aerodrome unless the meteorological conditions, at the time of use, are at or above the aerodrome operating minima for that operation; and
b) take off or continue beyond the point of in-flight re-planning unless at the aerodrome of intended landing or at each alternate aerodrome to be selected in compliance with OPS2(A)-2.2.3.5, current meteorological reports or a combination of current reports and forecasts indicate that the meteorological conditions will be, at the estimated time of use, at or above the aerodrome operating minima for that operation.

OPS2(A)-2.2.3.4.3 Estimated time of use

In the context of AUA-OPS-2(A) the time margin for ‘estimated time of use’ is one hour before and after the earliest and latest time of arrival at the aerodrome.

OPS2(A)-2.2.3.4.4 Icing conditions

The pilot-in-command shall not commence a flight to be operated in known or expected icing conditions unless the aeroplane is certificated and equipped to cope with such conditions.

OPS2(A)-2.2.3.4.5 Ground icing conditions

The pilot-in-command shall not commence a flight to be planned or expected to operate in suspected or known ground icing conditions 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.

2.2.3.5 Alternate aerodromes

OPS2(A)-2.2.3.5 Destination Alternate aerodromes

No person may commence a flight in an aeroplane in accordance with the instrument flight rules, without at least one destination alternate aerodrome specified in the flight plans, unless:

a) the duration of the flight from the departure aerodrome, or from the point of in-flight re-planning, to the destination aerodrome is such that, taking into account all meteorological conditions and operational information relevant to the flight, at the estimated time of use, a reasonable certainty exists that:
   1) the approach and landing may be made under visual meteorological conditions; and
   2) separate runways are usable at the estimated time of use of the destination aerodrome with at least one runway having an operational instrument approach procedure; or

b) the aerodrome of intended landing is isolated and:
   1) a standard instrument approach procedure is prescribed for the aerodrome of intended landing;
   2) a point of no return has been determined; and
   3) a flight shall not be continued past the point of no return unless available current meteorological information indicates that the following meteorological conditions will exist at the estimated time of use:
      i. a cloud base of at least 300 m (1 000 ft) above the minimum associated with the instrument approach procedure; and
      ii. visibility of at least 5.5 km (3 NM) or of 4 km (2 NM) more than the minimum associated with the instrument approach procedure.

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

2.2.3.6 Fuel and oil requirements

OPS2(A)-2.2.3.6.1 Fuel and oil requirements

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

a) when the flight is conducted in accordance with the instrument flight rules and a destination alternate aerodrome is not required in accordance with OPS2(A)-2.2.3.5, or when the flight is to an isolated aerodrome, flight to the aerodrome of intended

landing, and after that, have a final reserve fuel for at least 45 minutes at normal cruising altitude; or

b) when the flight is conducted in accordance with the instrument flight rules and a destination alternate aerodrome is required, flight to the aerodrome of intended landing, then to an alternate aerodrome, and after that, have a final reserve fuel for at least 45 minutes at normal cruising altitude; or

c) when the flight is conducted in accordance with day VFR, flight to the aerodrome of intended landing, and after that, have a final reserve fuel for at least 30 minutes at normal cruising altitude; or

d) when the flight is conducted in accordance with night VFR, flight to the aerodrome of intended landing and thereafter have a final reserve fuel for at least 45 minutes at normal cruising altitude.

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

OPS2(A)-2.2.3.6.2 Fuel and oil supply after flight commencement

For the use of fuel after flight commencement for purposes other than originally intended during pre-flight planning, the pilot-in-command shall perform a re-analysis and, if applicable, adjustment of the planned operation, to safely complete the flight.

2.2.3.7 Refueling with passengers on board

OPS2(A)-2.2.3.7.1 Refueling with passengers embarking, on board or disembarking

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

OPS2(A)-2.2.3.7.2 Refuelling with passengers embarking, on board or disembarking

When refuelling with passengers embarking, on board or disembarking, two-way communications should be maintained by the aeroplane's intercommunication system or other suitable means between the ground crew supervising the refuelling and the pilot-in-command or other qualified personnel required by OPS2(A)-2.2.3.7.1.

Note 1.— The provisions of OPS2(A)-2.2.3.7.1 do not necessarily require the deployment of integral aeroplane stairs or the opening of emergency exits as a prerequisite to refuelling.

Note 2.—Additional precautions are required when refuelling with fuels other than aviation kerosene or when refueling results in a mixture of aviation kerosene with other aviation turbine fuels, or when an open line is used.

2.2.3.8 Oxygen Supply

OPS2(A)-2.2.3.8 Oxygen supply

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

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

Note 2.— Approximate altitudes in the Standard Atmosphere corresponding to the values of absolute pressure used in the text of Attachment 2 are as follows:

Absolute pressure	*Metres*	*Feet*
700 hPa	*3.000*	*10.000*
620 hPa	*4.000*	*13.000*
376 hPa	*7.600*	*25.000*

2.2.4.1 In-flight procedures - Aerodrome operating minima

OPS2(A)-2.2.4.1.1 Destination alternate aerodromes

The pilot-in-command shall not continue a flight 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 paragraph 2.2.2.2.

OPS2(A)-2.2.4.1.2 Commencement and continuation of approach

The pilot-in-command shall not continue an instrument approach below 300 m (1 000 ft) above the aerodrome elevation or into the final approach segment unless the reported visibility or controlling RVR is at or above the aerodrome operating minima.

OPS2(A)-2.2.4.1.3 Commencement and continuation of approach

If, after entering the final approach segment or after descending below 300 m (1 000 ft) above the aerodrome elevation, the reported visibility or controlling RVR falls below the specified minimum, the pilot-in-command may continue the approach to DA/H or MDA/H. In any case,

the pilot-in-command shall not continue its approach-to-land beyond a point at which the limits of the aerodrome operating minima would be infringed.

Note — Controlling RVR means the reported values of one or more RVR reporting locations (touchdown, midpoint 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 the authority.

2.2.4.2 In-flight procedures - Meteorological and operational observations by pilots

OPS2(A)-2.2.4.2.1 Reporting of hazardous weather conditions

The pilot-in-command shall, as soon as possible, report to the appropriate air traffic services (ATS) any hazardous weather conditions encountered that are likely to affect safety of other aircraft.

OPS2(A)-2.2.4.2.2 Reporting runway braking action

Whenever the runway braking action encountered during landing roll is not as good as reported by the aerodrome operator in the Runway Condition Report (RCR), the pilot-in-command should notify the air traffic services (ATS) by means of a special air-report (AIREP) as soon as practicable

Note.— The procedures for making special air-reports regarding runway braking action are contained in the PANS-ATM (Doc 4444), Chapter 4, and Appendix 1.

OPS2(A)-2.2.4.3 Hazardous flight conditions

The pilot-in-command shall, as soon as possible, report to the appropriate air traffic services (ATS) any hazardous flight conditions, other than meteorological conditions, encountered that are likely to affect safety of other aircraft. The reports so rendered should give such details as may be pertinent to the safety of other aeroplanes.

OPS2(A)-2.2.4.4 Aeroplane operating procedures for landing performance

An approach to land should not be continued below 300 m (1 000 ft) above aerodrome elevation unless the pilot-in-command is satisfied that, with the runway surface condition information available, the aeroplane performance information indicates that a safe landing can be made.

Note 1.— The procedures for using runway surface condition information on board aircraft are contained in the PANSAerodromes (Doc 9981) and in the performance section of the aeroplane flight manual; and for aeroplanes certificated in accordance with Annex 8, Part IIIB, in the Aeroplane Performance Manual (Doc 10064).

Note 2.— Guidance on development of aeroplane performance information for aeroplanes certificated in accordance with Annex 8, Part IIIB is contained in the Aeroplane Performance Manual (Doc 10064).

2.2.4.5 Flight crew members at duty stations

OPS2(A)-2.2.4.5.1 Take-off and landing

During take-off and landing all flight crew members required to be on flight deck duty shall be at their assigned stations.

OPS2(A)-2.2.4.5.2 En route

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

OPS2(A)-2.2.4.5.3 Seat belts

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

OPS2(A)-2.2.4.5.4 Safety harness

When safety harnesses are provided, 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 1: Safety harness includes shoulder strap(s) and a seat belt which may be used independently.

2.2.4.6 Use of Oxygen

OPS2(A)-2.2.4.6 Use of oxygen

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 prescribed in OPS2(A)-2.2.3.8.

2.2.4.7 Safeguarding of cabin crew and passengers in pressurized aeroplanes in the event of loss of pressurization

OPS2(A)-2.2.4.7 Safeguarding of cabin crew and passengers in pressurized aeroplanes in the event of loss of pressurization

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2.2.4.8 In-flight fuel management

OPS2(A)-2.2.4.8.1 In-flight fuel management

The pilot-in-command shall monitor the amount of usable fuel remaining on board to ensure that it is protected and not less than the fuel required to proceed to an aerodrome where a safe landing can be made with the planned final reserve fuel remaining.

OPS2(A)-2.2.4.8.2 In-flight fuel management – MINIMUM FUEL

The pilot-in-command shall advise ATC of a minimum fuel state by declaring MINIMUM FUEL when the pilot-in-command has:

(1) committed to land at a specific aerodrome or operating site; and

(2) calculated that any change to the existing clearance to that aerodrome or operating site, or other air traffic delays, may result in landing with less than the planned final reserve fuel.

Note.—The declaration of MINIMUM FUEL informs ATC that all planned aerodrome options have been reduced to a specific aerodrome of intended landing and any change to the existing clearance, or air traffic delays, may result in landing with less than the planned final reserve fuel. This is not an emergency situation but an indication that an emergency situation is possible should any additional delay occur.

OPS2(A)-2.2.4.8.3 In-flight fuel management – MAYDAY

The pilot-in-command shall declare a situation of fuel emergency by broadcasting MAYDAY MAYDAY MAYDAY FUEL, when the calculated usable fuel estimated to be available upon landing at the nearest aerodrome where a safe landing can be made is less than the planned final reserve fuel.

Note 1.—The planned final reserve fuel refers to the value calculated in paragraph 2.2.3.6 and is the minimum amount of fuel required upon landing at any aerodrome.

2.2.4.9 Instrument approach procedures

OPS2(A)-2.2.4.9 Instrument approach procedures

The pilot-in-command shall ensure that instrument approach procedures established by the State of the aerodrome being used are used.

Note .—See OPS2(A)-2.2.2.2.1 for instrument approach operation classifications.

2.2.5 Duties of the pilot-in-command

OPS2(A)-2.2.5.1 Pilot-in-command responsibilities - general

The pilot-in-command shall be responsible for the operation, safety and security of the aeroplane and the safety of all crew members, passengers and cargo on board.

OPS2(A)-2.2.5.2 Pilot-in-Command responsibilities

The pilot-in-command shall be responsible for ensuring that a flight:

a) will not be commenced if any flight crew member is incapacitated from performing duties by any cause such as injury, sickness, fatigue, the effects of any psychoactive substance; and

b) will not be continued beyond the nearest suitable aerodrome when flight crew members' capacity to perform functions is significantly reduced from causes such as fatigue, sickness or lack of oxygen.

OPS2(A)-2.2.5.3 Pilot-in-command responsibilities – Notification of accident

The Pilot-in-command shall notify the nearest appropriate authority by the quickest available means of any accident involving the aeroplane, that results in serious injury or death of any person or substantial damage to the aeroplane or property.

Note. — Pursuant to article 5 of the "Landsbesluit Luchtvaartongevallen" (AB 1995 no. 72) is the pilot-in-command responsible to notify the Aruban Accident Board of any accident or serious incident.

OPS2(A)-2.2.5.4 Ground Proximity detection

When undue proximity to the ground is detected by a flight crew member or by a ground proximity warning system, the pilot flying shall take corrective action immediately in order to establish safe flight conditions.

OPS2(A)-2.2.5.5 Occurrence reporting

(a) The pilot-in-command or the operator of an aeroplane shall report to the Authority any event which constitutes an occurrence as described in (c).

(b) Reports shall be made as soon as practicable, but in any case within 72 hours of the pilot-in-command or operator identifying the condition to which the report relates, unless exceptional circumstances prevent this.

(c) Occurrences

(i) An occurrence means any safety-related event which endangers or which, if not corrected or addressed, could endanger an aircraft, its occupants or any other person and includes in particular an accident or serious incident.

(ii) As occurrences related to the operation of the aircraft, are considered:
- (A) collision-related occurrences;
- (B) take-off and landing-related occurrences;
- (C) fuel-related occurrences;
- (D) in-flight occurrences;
- (E) communication-related occurrences;
- (F) occurrences related to injury, emergencies and other critical situations;
- (G) crew incapacitation and other crew-related occurrences;
- (H) meteorological conditions or security-related occurrences;

AMC1 OPS2(A)-2.2.5.5 (a) Occurrence reporting

Reports to the Authority must be submitted through the Occurrence reporting link on the Authority's website:
http://dca.gov.aw/

If, reporting through the above stated means in not available, reports can be submitted through DCA Safety management email address:
safetymanagement@dca.gov.aw

AMC2 OPS2(A)-2.2.5.5 (c) Occurrence reporting

Note. — This AMC is structured in such a way that the pertinent occurrences are linked with categories of activities during which they are normally observed, according to experience, in order to facilitate the reporting of those occurrences. However, this presentation is not exclusive and doesn't constitute that an e occurrence must not be reported in case they take place outside this list.

An occurrence as described in (c) shall include amongst others:

1. AIR OPERATIONS

1.1 Flight preparation

(1) Use of incorrect data or erroneous entries into equipment used for navigation or performance calculations which has or could have endangered the aircraft, its occupants or any other person.

(2) Carriage or attempted carriage of dangerous goods in contravention of applicable legislations including incorrect labelling, packaging and handling of dangerous goods.

1.2 Aircraft preparation

(1) Incorrect fuel type or contaminated fuel.

(2) Missing, incorrect or inadequate De-icing/Anti-icing treatment.

1.3. Take-off and landing

(1) Taxiway or runway excursion.

(2) Actual or potential taxiway or runway incursion.

(3) Final Approach and Take-off Area (FATO) incursion.

(4) Any rejected take-off.

(5) Inability to achieve required or expected performance during take-off, go-around or landing.

(6) Actual or attempted take-off, approach or landing with incorrect configuration setting.

(7) Tail, blade/wingtip or nacelle strike during take-off or landing.

(8) Approach continued against air operator stabilised approach criteria.

(9) Continuation of an instrument approach below published minimums with inadequate visual references.

(10) Precautionary or forced landing.

(11) Short and long landing.

(12) Hard landing.

1.4. Any phase of flight

(1) Loss of control.

(2) Aircraft upset, exceeding normal pitch attitude, bank angle or airspeed inappropriate for the conditions.

(3) Level bust.

(4) Activation of any flight envelope protection, including stall warning, stick shaker, stick pusher and automatic protections.

(5) Unintentional deviation from intended or assigned track of the lowest of twice the required navigation performance or 10 nautical miles.

(6) Exceedance of aircraft flight manual limitation.

(7) Operation with incorrect altimeter setting.

(8) Jet blast or rotor and prop wash occurrences which have or could have endangered the aircraft, its occupants or any other person.

(9) Misinterpretation of automation mode or of any flight deck information provided to the flight crew which has or could have endangered the aircraft, its occupants or any other person.

1.5. Other types of occurrences

(1) Unintentional release of cargo or other externally carried equipment.

(2) Loss of situational awareness (including environmental, mode and system awareness, spatial disorientation, and time horizon).

(3) Any occurrence where the human performance has directly contributed to or could have contributed to an accident or a serious incident.

2. TECHNICAL OCCURRENCES

2.1. Structure and systems

(1) Loss of any part of the aircraft structure in flight.

(2) Loss of a system.

(3) Loss of redundancy of a system.

(4) Leakage of any fluid which resulted in a fire hazard or possible hazardous contamination of aircraft structure, systems or equipment, or which has or could have endangered the aircraft, its occupants or any other person.

(5) Fuel system malfunctions or defects, which had an effect on fuel supply and/or distribution.

(6) Malfunction or defect of any indication system when this results in misleading indications to the crew.

(7) Abnormal functioning of flight controls such as asymmetric or stuck/jammed flight controls (for example: lift (flaps/slats), drag (spoilers), attitude control (ailerons, elevators, rudder) devices).

2.2. Propulsion (including engines, propellers and rotor systems) and auxiliary power units (APUs)

(1) Failure or significant malfunction of any part or controlling of a propeller, rotor or powerplant.

(2) Damage to or failure of main/tail rotor or transmission and/or equivalent systems.

(3) Flameout, in-flight shutdown of any engine or APU when required (for example: ETOPS (Extended range Twin engine aircraft Operations), MEL (Minimum Equipment List)).

(4) Engine operating limitation exceedance, including overspeed or inability to control the speed of any high-speed rotating component (for example: APU, air starter, air cycle machine, air turbine motor, propeller or rotor).

(5) Failure or malfunction of any part of an engine, powerplant, APU or transmission resulting in any one or more of the following:

(a) thrust-reversing system failing to operate as commanded;

(b) inability to control power, thrust or rpm (revolutions per minute);

(c) non-containment of components/debris.

3. INTERACTION WITH AIR NAVIGATION SERVICES (ANS) AND AIR TRAFFIC MANAGEMENT (ATM)

(1) Unsafe ATC (Air Traffic Control) clearance.

(2) Prolonged loss of communication with ATS (Air Traffic Service) or ATM Unit.

(3) Conflicting instructions from different ATS Units potentially leading to a loss of separation.

(4) Misinterpretation of radio-communication which has or could have endangered the aircraft, its occupants or any other person.

(5) Intentional deviation from ATC instruction which has or could have endangered the aircraft, its occupants or any other person.

4. EMERGENCIES AND OTHER CRITICAL SITUATIONS

(1) Any event leading to the declaration of an emergency ('Mayday' or 'PAN call').

(2) Any burning, melting, smoke, fumes, arcing, overheating, fire or explosion.

(3) Contaminated air in the cockpit or in the passenger compartment which has or could have endangered the aircraft, its occupants or any other person.

(4) Failure to apply the correct non-normal or emergency procedure by the flight or cabin crew to deal with an emergency.

(5) Use of any emergency equipment or non-normal procedure affecting in-flight or landing performance.

(6) Failure of any emergency or rescue system or equipment which has or could have endangered the aircraft, its occupants or any other person.

(7) Uncontrollable cabin pressure.

(8) Critically low fuel quantity or fuel quantity at destination below required final reserve fuel.

(9) Any use of crew oxygen system by the crew.

(10) Incapacitation of any member of the flight or cabin crew that results in the reduction below the minimum certified crew complement.

(11) Crew fatigue impacting or potentially impacting their ability to perform safely their flight duties.

5. EXTERNAL ENVIRONMENT AND METEOROLOGY

(1) A collision or a near collision on the ground or in the air, with another aircraft, terrain or obstacle[†].

(2) ACAS RA (Airborne Collision Avoidance System, Resolution Advisory).

(3) Activation of genuine ground collision system such as GPWS (Ground Proximity Warning System)/TAWS (Terrain Awareness and Warning System) 'warning'.

(4) Wildlife strike including bird strike.

(5) Foreign object damage/debris (FOD).

(6) Unexpected encounter of poor runway surface conditions.

(7) Wake-turbulence encounters.

(8) Interference with the aircraft by firearms, fireworks, flying kites, laser illumination, high powered lights, lasers, Remotely Piloted Aircraft Systems, model aircraft or by similar means.

(9) A lightning strike which resulted in damage to the aircraft or loss or malfunction of any aircraft system.

(10) A hail encounter which resulted in damage to the aircraft or loss or malfunction of any aircraft system.

(11) Severe turbulence encounter or any encounter resulting in injury to occupants or deemed to require a 'turbulence check' of the aircraft.

(12) A significant wind shear or thunderstorm encounter which has or could have endangered the aircraft, its occupants or any other person.

(13) Icing encounter resulting in handling difficulties, damage to the aircraft or loss or malfunction of any aircraft system.

(14) Volcanic ash encounter.

6. SECURITY

(1) Bomb threat or hijack.

(2) Difficulty in controlling intoxicated, violent or unruly passengers.

[†] Obstacle includes vehicle.

(3) Discovery of a stowaway.

OPS2(A)-2.2.6 Cabin baggage (take-off and landing)

The pilot-in-command shall ensure that all baggage carried onto an aeroplane and taken into the passenger cabin is securely stowed.

CHAPTER 2.3 AEROPLANE PERFORMANCE OPERATING LIMITATIONS

2.3.1 General

OPS2(A)-2.3.1.1 Operations limitations

An aeroplane shall be operated:

a) in compliance with the terms of its airworthiness certificate or equivalent approved document;

b) within the operating limitations prescribed by the Authority; and

c) if applicable, within the mass limitations imposed by compliance with the applicable Aircraft Noise Certificate issued by the Authority, unless otherwise authorized in exceptional circumstances for a certain aerodrome or a runway where there is no noise disturbance problem, by the competent authority of the State in which the aerodrome is situated.

OPS2(A)-2.3.1.2 Operations limitations – visual presentation

Placards, listings, instrument markings, or combinations thereof, containing those operating limitations for visual presentation, shall be displayed in the aeroplane, as follows;

(a) The aeroplane must contain:
  (1) The specified markings and placards; and
  (2) Any additional information, instrument markings, and placards required for the safe operation if there are unusual design, operating, or handling characteristics;

(b) Each marking and placard prescribed in paragraph (a) of this section:
  (1) Must be displayed in a conspicuous place; and
  (2) May not be easily erased, disfigured, or obscured.

OPS2(A)-2.3.1.3 Performance

The pilot-in-command shall determine that aeroplane performance will permit the take-off and departure to be carried out safely and is directly responsible for, and is the final authority as to, the operation of that aircraft.

CHAPTER 2.4 AEROPLANE INSTRUMENTS, EQUIPMENT AND FLIGHT DOCUMENTS

2.4.1 General

OPS2(A)-2.4.1 Instrument and equipment - general

In addition to the minimum equipment necessary for the issuance of a certificate of airworthiness, the instruments, equipment and flight documents prescribed in the following paragraphs shall be installed or carried, as appropriate, in 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 acceptable to the Authority.

2.4.2 Aeroplanes on all flights

OPS2(A)-2.4.2.1 Instrument on aeroplane - general

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.

OPS2(A)-2.4.2.2 Instrument on aeroplane

An aeroplane shall be equipped with or carry on board:

a) an accessible first-aid kit;

b) portable fire extinguishers of a type which, when discharged, will not cause dangerous contamination of the air within the 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 — Refer to OPS2(A)-2.4.2.3 for fire extinguishing agents.

c) 1) a seat or berth for each person who is aged 24 months or more; and

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

d) the following manuals, charts and information:

1) the flight manual or other documents or information concerning any operating limitations prescribed for the aeroplane by the authority, required for the application of Chapter 2.3;

2) any specific approval issued by the Authority, if applicable, for the operation(s) to be conducted;

3) current and suitable charts for the route of the proposed flight and all routes along which it is reasonable to expect that the flight may be diverted;

4) procedures, as prescribed in the Air Traffic State Decree AB 2008 no44, for pilots-in-command of intercepted aircraft;

5) visual signals for use by intercepting and intercepted aircraft, as contained in the Air Traffic State Decree AB 2008 no44; and

6) the journey log book for the aeroplane;

e) where the aeroplane is fitted with fuses that are accessible in flight, spare electrical fuses of appropriate ratings for replacement of those fuses.

OPS2(A)-2.4.2.3 Fire extinguisher

Any agent used in a built-in fire extinguisher for each lavatory disposal receptacle for towels, paper or waste in an aeroplane for which the individual certificate of airworthiness is first issued on or after 31 December 2011 and any extinguishing agent used in a portable fire extinguisher in an aeroplane for which the individual certificate of airworthiness is first issued on or after 31 December 2018 shall:

a) meet the applicable minimum performance requirements of the Authority; and

b) not be of a type listed in the 1987 *Montreal Protocol on Substances that Deplete the Ozone Layer* as it appears in the Eighth Edition of the *Handbook for the Montreal Protocol on Substances that Deplete the Ozone La*yer, Annex A, Group II.

Note.— Information concerning extinguishing agents is contained in the UNEP Halons Technical Options Committee Technical Note No. 1 — New Technology Halon Alternatives *and* FAA Report No. DOT/FAA/AR-99-63, Options to the Use of Halons for Aircraft Fire Suppression Systems.

OPS2(A)-2.4.2.4

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OPS2(A)-2.4.2.5

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OPS2(A)-2.4.2.6.1 Marking in break-in points

(a) If areas of the aeroplane's fuselage suitable for break-in by rescue crews in emergency are marked, such areas shall be marked as shown in figure 1.

(b) The colour of the markings shall be red or yellow, and if necessary they shall be outlined in white to contrast with the background.

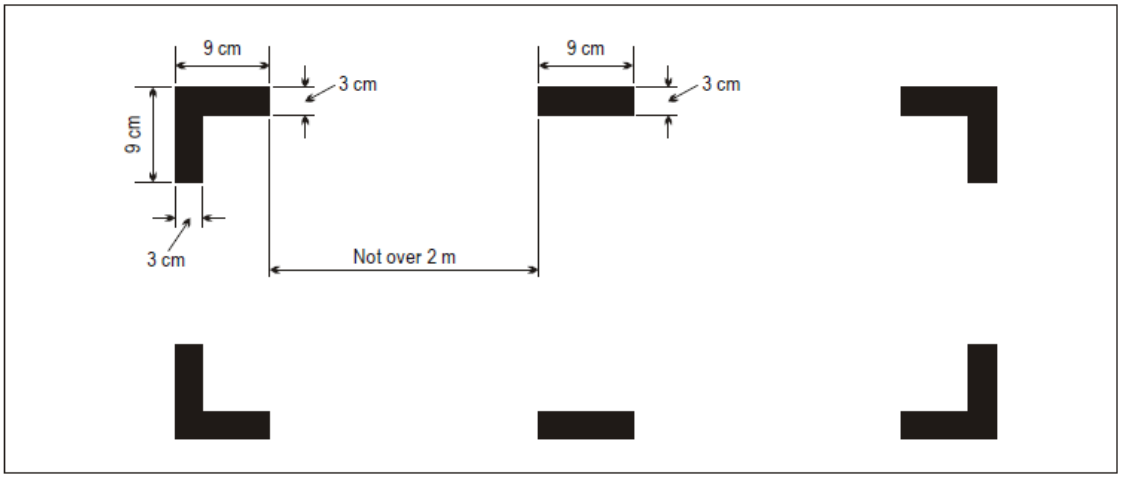

Figure 1. Marking of break-in points

OPS2(A)-2.4.2.6.2 Marking-corners

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

Note.— This requirement does not require any aeroplane to have break-in areas.

2.4.3 All aeroplanes operated as VFR flights

OPS2(A)-2.4.3.1 Operations under VFR – flight and navigational instruments and associated equipment

All aeroplanes when operated as VFR flights shall be:

a) equipped with a means of measuring and displaying:

1) magnetic heading;

2) barometric altitude;

3) indicated airspeed;

b) equipped with, or shall carry, a means of measuring and displaying time in hours, minutes and seconds; and

c) equipped with such additional equipment as may be prescribed by the authority.

OPS2(A)-2.4.3.2 Operations under VFR operated as controlled flight

VFR flights which are operated as controlled flights should be equipped in accordance with OPS2-2.4.7.

2.4.4 Aeroplanes on flights over water

OPS2(A)-2.4.4.1 Seaplanes

Seaplanes for all flights shall be equipped with:

a) one life jacket, or equivalent individual floatation device, for each person on board, stowed in a position readily accessible from the seat or berth.

b) equipment for making the sound signals prescribed in the *International Regulations for Preventing Collisions at Sea*, where applicable;

c) one anchor; and

d) one sea anchor (drogue), when necessary to assist in manoeuvring.

Note.— "Seaplanes" includes amphibians operated as seaplanes.

OPS2(A)-2.4.4.2 Landplanes

Single-engined landplanes

All single-engined landplanes:

a) when flying en route over water beyond gliding distance from the shore; or

b) when taking off or landing at an aerodrome where, in the opinion of the pilot-in-command, the take-off or approach path is so disposed over water that in the event of a mishap there would be a likelihood of a ditching;

shall carry one life jacket or equivalent individual floatation device for each person on board, stowed in a position easily accessible from the seat or berth of the person for whose use it is provided.

Note.— "Landplanes" includes amphibians operated as landplanes.

2.4.4.3 Aeroplanes on extended flights over water

OPS2(A)-2.4.4.3.1 Aeroplanes on extended flights over water – life jacket

(a) All aeroplanes operated on extended flights over water shall be equipped with, at a minimum, one life jacket or equivalent individual floatation device for each person on board, stowed in a position easily accessible from the seat or berth of the person for whose use it is provided.

(b) Each life-jacket or equivalent individual flotation device shall be equipped with a means of electric illumination for the purpose of facilitating the location of persons

OPS2(A)-2.4.4.3.2 Aeroplanes on extended flights over water - ditching

The pilot-in-command of an aeroplane operated on an extended flight over water shall determine the risks to survival of the occupants of the aeroplane in the event of a ditching.

The pilot-in-command shall take into account the operating environment and conditions such as, but not limited to, sea state and sea and air temperatures, the distance from land suitable for making an emergency landing, and the availability of search and rescue facilities. Based upon the assessment of these risks, the pilot-in-command shall, in addition to the equipment required in OPS2(A)-2.4.4.3.1, ensure that the aeroplane is equipped with:

a) life-saving rafts in sufficient numbers to carry all persons on board, stowed so as to facilitate their ready use in emergency, provided with such life-saving equipment, including means of sustaining life, as is appropriate to the flight to be undertaken; and

b) equipment for making the distress signals described in the Air Traffic State Decree AB 2008 no44.

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

2.4.5 Aeroplanes on flights over designated land areas

OPS2-2.4.5 Aeroplanes on flights over designated land areas

Aeroplanes, operated across land areas which have been designated by the State concerned as areas in which search and rescue would be especially difficult, shall be equipped with:

(1) signalling devices to make the distress signals; and

(2) additional life-saving equipment (including means of sustaining life) as may be appropriate to the area overflown.

2.4.6 Aeroplanes on high altitude flights

OPS2(A)- 2.4.6.1 Aeroplanes on high altitude flights

Aeroplanes intended to be operated at high altitudes shall be equipped with oxygen storage and dispensing apparatus capable of storing and dispensing the oxygen supplies required in OPS2(A)-2.2.3.8.

OPS2(A)-2.4.6.2 Aeroplanes for which the individual certificate of airworthiness is first issued on or after 1 January 1990

Pressurized aeroplanes intended to be operated at flight altitudes at which the atmospheric pressure is less than 376 hPa shall be equipped with a device to provide positive warning to the flight crew of any dangerous loss of pressurization.

OPS2(A)-2.4.6.3 Aeroplanes for which the individual certificate of airworthiness was first issued before 1 January 1990

Pressurized aeroplanes intended to be operated at flight altitudes at which the atmospheric pressure is less than 376 hPa should be equipped with a device to provide positive warning to the flight crew of any dangerous loss of pressurization.

2.4.7 All aeroplanes operated in accordance with the instrument flight rules

OPS2(A)-2.4.7 All aeroplanes operated in accordance with the instrument flight rules

All aeroplanes when operated in accordance with the instrument flight rules, or when the aeroplane cannot be maintained in a desired attitude without reference to one or more flight instruments, shall be:

a) equipped with a means of measuring and displaying:
   1) magnetic heading (standby compass);
   2) barometric altitude;
   3) indicated airspeed, with a means of preventing malfunctioning due to either condensation or icing;
   4) turn and slip;
   5) aircraft attitude;
   6) stabilized aircraft heading;

Note.— The requirements of 4), 5) and 6) may be met by combinations of instruments or by integrated flight director systems provided that the safeguards against total failure, inherent in the three separate instruments, are retained.

7) whether the supply of power to the gyroscopic instruments is adequate;

8) the outside air temperature;

9) rate-of-climb and descent;

b) equipped with, or shall carry, a means of measuring and displaying time in hours, minutes and seconds; and

c) equipped with such additional instruments or equipment as may be prescribed by the Authority.

2.4.8 Aeroplanes when operated at night

OPS2(A)-2.4.8 Aeroplanes when operated at night

Aeroplanes, when operated at night, shall be equipped with:

a) the equipment specified in OPS2(A)-2.4.7; and

b) the lights required by the Air Traffic State Decree AB 2008 no44, article 40 for aircraft in flight or operating on the movement area of an aerodrome;

Note: Specifications for navigation lights are contained in Attachment 3.

c) a landing light;

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

e) lights in all passenger compartments; and

f) an independent portable light for each crew member station.

2.4.9 Aeroplanes complying with the noise certification Standards

OPS2(A)-2.4.9 Aeroplanes complying with the noise certification Standards

An aeroplane shall carry an aircraft noise certificate issued by the Authority.

2.4.10 Mach number indicator

OPS2(A)-2.4.10 Mach number indicator

Aeroplanes with speed limitations expressed in terms of Mach number shall be equipped with a means of displaying Mach number.

2.4.11 Aeroplanes required to be equipped with ground proximity warning systems (GPWS)

OPS2(A)-2.4.11.1 Ground proximity warning systems (GPWS) for turbine-engined aeroplanes take-off mass in excess of 5 700 kg or authorized to carry more than nine passengers

All turbine-engined aeroplanes of a maximum certificated take-off mass in excess of 5 700 kg or authorized to carry more than nine passengers shall be equipped with a ground proximity warning system which has a forward-looking terrain avoidance function.

OPS2(A)-2.4.11.2

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OPS2(A)-2.4.11.3

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OPS2(A)-2.4.11.4 Ground proximity warning system

A ground proximity warning system shall provide automatically a timely and distinctive warning to the flight crew when the aeroplane is in potentially hazardous proximity to the earth's surface.

OPS2(A)-2.4.11.5 Ground proximity warning system -minimum

A ground proximity warning system shall provide, at a minimum, warnings of at least the following circumstances:

a) excessive descent rate;

b) excessive altitude loss after take-off or go-around; and

c) unsafe terrain clearance.

OPS2(A)-2.4.11.6

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OPS2(A)-2.4.11.7 Ground proximity warning system installed in turbine-engined aeroplanes of a maximum take-off mass in excess of 5700kg or authorized to carry more than nine passengers for which the individual certificate of airworthiness was first issued after 1 January 2011

A ground proximity warning system for aircraft falling in this chapter shall provide, as a minimum warnings of at least the following circumstances:

a) excessive descent rate;

b) excessive terrain closure rate;

c) excessive altitude loss after take-off or go-around;

d) unsafe terrain clearance while not in landing configuration;

1) gear not locked down;

2) flaps not in landing position; and

e) excessive descent below the instrument glide path

2.4.12 Emergency locator transmitter (ELT)

OPS2(A)-2.4.12.1 Automatic ELT

All aeroplanes shall be equipped with at least one automatic ELT.

OPS2(A)-2.4.12.2

Intentionally left blank.

OPS2(A)-2.4.12.3

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OPS2(A)-2.4.12.4 Requirements for ELT

ELT equipment carried to satisfy the requirements of OPS2-2.4.12.1 shall operate in accordance with the relevant provisions of ICAO Annex 10, Volume III.

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

2.4.13 Aeroplanes required to be equipped with a pressure-altitude reporting transponder

OPS2(A)-2.4.13.1 Pressure-altitude reporting transponder

All aeroplanes shall be equipped with a pressure-altitude reporting transponder which operates in accordance with the relevant provisions of ICAO Annex 10, Volume IV.

OPS2(A)-2.4.13.2 Pressure-altitude reporting transponder VFR-flights

Unless exempted by the Authority, aeroplanes operating as VFR flights shall be equipped with a pressure-altitude reporting transponder which operates in accordance with the relevant provision of ICAO Annex 10, Volume IV.

Note.— These provisions are intended to support the effectiveness of ACAS as well as to improve the effectiveness of air traffic services.

2.4.14 Microphones

OPS2(A)-2.4.14 Microphones

When operating under the instrument flight rules all flight crew members required to be on flight deck duty shall communicate through boom or throat microphones below the transition level/altitude.

2.4.15 Aeroplanes equipped with automatic landing systems, a head-up display (HUD) or equivalent displays, enhanced vision systems (EVS), synthetic vision systems (SVS) and/or combined vision systems (CVS)

OPS2(A)-2.4.15 Approval for head-up display (HUD) or equivalent displays, enhanced vision systems (EVS), synthetic vision systems (SVS) and/or combined vision systems (CVS)

(a) Notwithstanding Chapter 2.2, OPS2(A)-2.2.2.2.1.1 to OPS2(A)-2.2.2.2.1.3, where aeroplanes are equipped with automatic landing systems, a HUD or equivalent displays, EVS, SVS or CVS, or any combination of those systems into a hybrid system, the operator may only use these systems used after obtaining an approval of the Authority. The Operator shall comply with all limitations, conditions and restrictions prescribed by the Authority.

(b) Operator shall demonstrate to the authority that the Operator has complied with the operational criteria contained in Attachment 4.

2.4.16 Flight recorders

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

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

Image and data link information may be recorded on either the CVR or the FDR.

Note 2.—Lightweight flight recorders comprise one or more of the following systems:

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

Image and data link information may be recorded on either the CARS or the ADRS.

Note 3.—Detailed requirements on flight recorders is contained in Attachment 5.

Note 4.— For aeroplanes for which the application for type certification is submitted to an ICAO Contracting State before 1 January 2016, specifications applicable to crash-protected flight recorders may be found in EUROCAE ED-112, ED-56A, ED-55, Minimum Operational Performance Specifications (MOPS), or earlier equivalent documents.

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

Note 6.—Specifications applicable to lightweight flight recorders may be found in EUROCAE ED-155, Minimum Operational Performance Specification (MOPS), or equivalent documents.

Note 7. – As of 7 November 2019, Section 3, Chapter 3.3 contains requirements for the use of voice, image and/or data recordings and transcripts.

2.4.16.1 Flight data recorders and aircraft data recording systems

Parameters to be recorded are listed in the tables in Attachment 5.

OPS2(A)-2.4.16.1.1 Flight data recorders and aircraft data recording systems

All aeroplanes of a maximum certificated take-off mass of over 5 700 kg for which the application for type certification is submitted to the authority on or after 1 January 2023 shall be equipped with an FDR capable of recording at least the 82 parameters listed in Table A5-1 of Attachment 5.

OPS2(A)-2.4.16.1.2 Recording technology

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

OPS2(A)-2.4.16.1.3 Duration

All FDRs shall retain the information recorded during at least the last 25 hours of their operation.

2.4.16.2 Cockpit voice recorders and cockpit audio recording systems

OPS2(A)-2.4.16.2.1 Applicability

Turbine-engined aeroplanes with a seating configuration of more than five passenger seats and a maximum certificated take-off mass of 5 700 kg or less that are equipped with either a CVR or a CARS shall comply with OPS2(A)-2.4.16.2.2 and OPS2(A)-2.4.16.2.3.

Note. — OPS(A)-1.4.16.2.1 does not imply a requirement to be equipped with a CVR/CARS for the aircraft specified in the clause. However, airplanes specified in the clause which are equipped with CVR/CARS shall comply with OPS2(A)-2.4.16.2.2 and OPS2(A)-2.4.16.2.3.

OPS2(A)-2.4.16.2.2 Recording Technology

CVRs and CARs shall not use of magnetic tape and wire.

OPS2(A)-2.4.16.2.3 Duration

(a) All CVRs retain the information recorded during at least the last two (2) hours of their operation.

(b) All aeroplanes that are required to be equipped with CARS, and for which the individual certificate of airworthiness is first issued on or after 1 January 2025, shall be equipped with a CARS which shall retain the information recorded during at least the last two hours of their operation.

2.4.16.3 Data link recorders

OPS2(A)-2.4.16.3.1 Applicability

(a) Aeroplanes for which the individual certificate of airworthiness is first issued on or after 1 January 2016

All aeroplanes for which the individual certificate of airworthiness is first issued on or after 1 January 2016, which use any of the data link communications applications listed in 5.1.2 of Attachment 5 and are required to carry a cockpit voice recorder (CVR), shall record the data link communications messages on a crash-protected flight recorder.

(b) Aeroplanes for which the individual certificate of airworthiness was first issued before 1 January 2016

All aeroplanes for which the individual certificate of airworthiness was first issued before 1 January 2016, that are required to carry a CVR and are modified on or after 1 January 2016 to install and use any of the data link communications applications referred to in 5.1.2 of Attachment 5, shall record the data link communications messages on a crash protected flight recorder. unless the installed data link communications equipment is compliant with a type certificate issued or aircraft modification first approved prior to 1 January 2016.

Note 1.—A Class B AIR could be a means for recording data link communications applications messages to and from the aeroplanes where it is not practical or is prohibitively expensive to record those data link communications applications messages on FDR or CVR.

Note 2.—The "aircraft modifications" refer to modifications to install the data link communications equipment on the aircraft (e.g. structural, wiring).

OPS2(A)-2.4.16.3.2 Duration

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

OPS2(A)-2.4.16.3.3 Correlation

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

2.4.16.4 Flight recorders — general

OPS2(A)-2.4.16.4.1 Construction and installation

Flight recorders shall be constructed, located and installed so as to provide maximum practical protection for the recordings in order that the recorded information may be

preserved, recovered and transcribed. Flight recorders shall meet the prescribed crashworthiness and fire protection specifications.

OPS2(A)-2.4.16.4.2 Operation

(a) Flight recorders shall not be switched off during flight time.

(b) To preserve flight recorder records, flight recorders shall be deactivated upon completion of flight time following an accident or incident. The flight recorders shall not be reactivated before their disposition.

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

Note 2.—The pilot-in-command's responsibilities regarding the retention of flight recorder records are contained in OPS2(A)-2.4.16.4.3.

OPS2(A)-2.4.16.4.3 Flight recorder records

The pilot-in-command, and/or the owner/operator, shall ensure, to the extent possible, in the event the aeroplane becomes involved in an accident, serious incident or an occurrence identified by the authority, 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 per the Aruba Aviation Act article 20a, sub 7(b).

OPS2(A)-2.4.16.4.4 Continued serviceability

The owner, or in the case where it is leased the lessee, or a designated agent shall conduct operational checks and evaluations of recordings from the flight recorder systems to ensure the continued serviceability of the recorders.

Note.— Procedures for the inspections of the flight recorder systems are given in Attachment 5.

OPS2(A)-2.4.16.4.5 Flight recorder electronic documentation

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

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

2.4.17 Electronic flight bags (EFBs)

OPS2(A)-2.4.17.1 EFB equipment

Where portable EFBs are used on board an aeroplane, the pilot-in-command and/or the Operator shall ensure that they do not adversely affect the performance of the aeroplane systems, equipment or the ability to operate the aeroplane.

2.4.17.2 EFB functions

OPS2(A)-2.4.17.2.1 Criteria for the use of EFB

Where EFBs are used on board an aeroplane the pilot-in-command and/or the Operator shall:

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

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

c) ensure that, in the event of an EFB failure, sufficient information is readily available to the flight crew for the flight to be conducted safely.

OPS2(A)-2.4.17.2.2 EFB specific approval

EFB systems may only be used after the Operator/owner has obtained from the Authority a specific approval for the operational use of the EFB functions to be used for the safe operation of aeroplane. The Operator shall comply with all limitations, conditions and restrictions prescribed by the authority.

2.4.17.3 EFB operational criteria specific approval requirements

OPS2(A)-2.4.17.3 EFB specific approval requirements

When applying for a specific approval for the use of EFBs, the Operator/owner shall demonstrate to the Authority that:

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

b) the Operator/owner has assessed the risks associated with the operations supported by the EFB function(s);

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

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

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

Note.— Further guidance concerning EFB systems can be found in AMC-033

2.4.18 Aeroplane operated under an Article 83 *bis* agreement

OPS2(A)-2.4.18.1 Carriage a certified true copy of the 83*bis* agreement

An aeroplane, when operating under an Article 83 *bis* agreement entered into between the Aruba as State of Registry and the State of the principal location of a general aviation operator, shall carry a certified true copy of the agreement summary, in either an electronic or hard copy format. When the summary is issued in a language other than English, an English translation shall be included.

OPS2(A)-2.4.18.2 Agreement summary

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

(b) The Authority, as the State of Registry shall transmit the agreement summary to ICAO together with the Article 83 *bis* Agreement for registration with the ICAO Council by the State of Registry or the State of the principal location of a general aviation operator.

Note.— The agreement summary transmitted with the Article 83 bis agreement registered with the ICAO Council contains the list of all aircraft affected by the agreement. However, the certified true copy to be carried on board as per OPS2(A)-2.4.18.1 will need to list only the specific aircraft carrying the copy.

CHAPTER 2.5 AEROPLANE COMMUNICATION, NAVIGATION AND SURVEILLANCE EQUIPMENT

2.5.1 Communication equipment

OPS2(A)-2.5.1.1 Radio communication equipment - IFR

Aeroplanes operated in accordance with the instrument flight rules or at night, shall be equipped with radio communication equipment. Such equipment shall be capable of conducting two-way communication with the aeronautical stations and on the frequencies as prescribed by the airspace requirements where the operation is being conducted.

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

OPS2(A)-2.5.1.2 More than one communication equipment

When compliance with OPS2(A)-2.5.1.1 requires that more than one communication equipment unit, each shall be independent of the other or others to the extent that a failure in any one will not result in failure of any other.

OPS2(A-)2.5.1.3 Radio communication equipment - VFR

Aeroplanes to be operated in accordance with VFR, but as a controlled flight, shall, unless exempted by the appropriate authority of the airspace being flown, be provided with radio communication equipment capable of conducting two-way communication at any time during flight with such aeronautical stations and on such frequencies as may be prescribed by the airspace requirements being flown.

OPS2(A)-2.5.1.4 Radio communication equipment - Extended flights over water or flight over designated land areas

An aeroplane to be operated on a flight to which the provisions of OPS2(A)-2.4.4.3.1 or OPS2(A)-2.4.5 apply shall, unless exempted by the of the airspace being flown, be provided with radio communication equipment capable of conducting two-way communication at any time during flight with such aeronautical stations and on such frequencies as may be prescribed by the airspace being flown.

OPS2(A)- 2.5.1.5 Radio communication equipment - frequency

The radio communication equipment required in accordance with OPS2(A)-2.5.1.1 to OPS2(A)-2.5.1.4 shall provide for communication on the aeronautical emergency frequency 121.5 MHz.

OPS2(A)-2.5.1.6 Performance-based communication and surveillance (pbcs) operations

For operations in airspaces where communication equipment is required to meet an RCP specification for *performance based communication* (PBC), an aeroplane shall, in addition to the requirements specified in OPS2(A)-2.5.1.1 and OPS2(A).2.5.1.2:

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

b) have information relevant to the aeroplane RCP specification capabilities listed in the flight manual or other aeroplane documentation approved by the Authority; and

c) where the aeroplane is operated in accordance with a MEL, have information relevant to the aeroplane RCP specification capabilities included in the MEL.

OPS2(A)-2.5.1.7 Approval

The Operator shall not conduct operations in areas where an RCP specification for PBC has been prescribed unless approved by the Authority.

OPS2(A)-2.5.1.8 Criteria for approval

For operations where an RCP specification for PBC has been prescribed, the Operator shall demonstrate to the authority that it has established:

a) normal and abnormal procedures, including contingency procedures;

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

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

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

OPS2(A)-2.5.1.9 Reports of observed communication performance

The operator shall ensure to provide to the Authority in respect of those aircraft mentioned in OPS2(A)-2.5.1.6, the following:

(1) Reports of observed communication performance issued by monitoring programmes established in accordance with ICAO Annex 11: 3.3.5.2; and

(2) Corrective action for individual aircraft, aircraft types, or operators identified in such reports as not complying with the RCP specification.

2.5.2 Navigation equipment

OPS2(A)-2.5.2.1 Navigation equipment

An aeroplane shall be equipped with navigation equipment which will enable it to proceed:

a) in accordance with its flight plan; and

b) in accordance with the requirements of air traffic services; except when, if not so precluded by the appropriate authority, navigation for flights under VFR is accomplished by visual reference to landmarks.

OPS2(A)-2.5.2.2 PBN-operations

For operations where a navigation specification for performance-based navigation (PBN) has been prescribed, an aeroplane shall, in addition to the requirements specified in OPS2-2.5.2.1:

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

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

c) where the aeroplane is operated in accordance with a MEL, have information relevant to the aeroplane navigation specification capabilities included in the MEL.

OPS2(A)-2.5.2.3 Specific approval PBN

The Operator shall not conduct operations in areas where a navigation specification for PBN has been prescribed unless approved by the Authority.

OPS2(A)-2.5.2.4 Criteria PBN approval

For operations where a navigation specification for PBN has been prescribed, the Operator shall demonstrate to the authority that it has established:

a) normal and abnormal procedures including contingency procedures;

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

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

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

Note 1.— Electronic navigation data management is an integral part of normal and abnormal procedures.

Note 2 — Additional concerning PBN operations can be found in AMC-036.

OPS2(A)-2.5.2.5 Template specific approval

The approval for operations based on PBN authorization required (AR) navigation specifications is accomplished in accordance with the template provided in Attachment 1.

OPS2(A)-2.5.2.6 Flights in MNPS

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 Authority for the MNPS operations concerned.

OPS2(A)-2.5.2.7 RVSM flights

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;

b) shall be issued a specific approval by the Authority as the State of Registry for operation in the airspace concerned; and

c) shall demonstrate a satisfactory vertical navigation performance in accordance with Attachment 6.

OPS2(A)-2.5.2.8 Specific approval

Prior to granting the RVSM specific approval required in accordance with OPS2(A)-2.5.2.7 b), the Authority shall be satisfied that:

a) the vertical navigation performance capability of the aeroplane satisfies the requirements specified in Attachment 6;

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

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

Note.— An RVSM specific 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.

OPS2(A)-2.5.2.9 Height-keeping performance

The operator shall provide to the Authority in respect of those aircraft mentioned in OPS2(A)-OPS2(A)-2.5.2.7, the following:

(1) the reports of height-keeping performance issued by monitoring agencies established in accordance with ICAO Annex 11: 3.3.5.1; and

(2) corrective action for individual aircraft, or aircraft type groups identified in such reports as not complying with the RVSM specification.

Note. —Further information can be found in Attachment 6 paragraph 3.

OPS2(A)-2.5.2.10 Height-keeping performance monitoring

The Operator/owner shall ensure that a minimum of two aeroplanes of each aircraft type grouping of the same Operator have their height-keeping performance monitored, at least once every two years or within intervals of 1 000 flight hours per aeroplane, whichever period is longer. If an Operator/owner aircraft type grouping consists of a single aeroplane, monitoring of that aeroplane shall be accomplished within the specified period.

OPS2(A)-2.5.2.11 Operation in RSVM airspace

It is prohibited to operate Aruban aircraft in RVSM airspace without a valid RVSM specific approval issued by the Authority.

Note: Violation of this provision can constitute the suspension or revocation of personnel licence/validation, and/or the de-registration of the aircraft.

OPS2(A)-2.5.2.12 Failure of one item of equipment

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 OPS2(A)-2.5.2.1 and where applicable OPS2(A)-2.5.2.2, OPS2(A)-2.5.2.6 and OPS2(A)-2.5.2.7.

Note.— This requirement may be met by means other than the duplication of equipment.

OPS2(A)-2.5.2.13 Landing in IMC conditions

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 affected. 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.

2.5.3 Surveillance equipment

OPS2(A)-2.5.3.1 Surveillance equipment

An aeroplane shall be equipped with surveillance equipment which will enable it to operate in accordance with the requirements of applicable airspace requirements.

OPS2(A)-2.5.3.2 Surveillance equipment – RSP specification

For operations where surveillance equipment is required to meet an RSP specification for performance-based surveillance (PBS), an aeroplane shall, in addition to the requirements specified in OPS2(A)-2.5.3.1:

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

b) have information relevant to the aeroplane RSP specification capabilities listed in the flight manual or other aeroplane documentation approved by the State of Design and accepted by the Authority; and

c) where the aeroplane is operated in accordance with a MEL, have information relevant to the aeroplane RSP specification capabilities included in the MEL.

OPS2(A)-2.5.3.3 Surveillance equipment – RSP specification Authorization

The Operator shall not conduct operations in areas where an RSP specification for PBS has been prescribed, unless approved by the Authority.

OPS2(A)-2.5.3.4 RSP specification

For operations where an RSP specification for PBS has been prescribed, the Operator/owner shall demonstrate to the Authority that it has established:

a) normal and abnormal procedures, including contingency procedures;

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

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

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

OPS2(A)-2.5.3.5 Reports of observed surveillance performance

The operator shall:

(1) Provide to the Authority the reports of observed surveillance performance issued by established monitoring programmes in accordance with Annex 11, Chapter 3, 3.3.5.2; and

(2) Take immediate corrective action for individual aircraft or aircraft types identified in such reports as not complying with the RSP specification(s).

Note.— Further guidance can be found in AMC-037, chapter 5.2.

CHAPTER 2.6 AEROPLANE CONTINUING AIRWORTHINESS

Note.— For the purpose of this chapter "aeroplane" includes: engines, propellers, components, accessories, instruments, equipment and apparatus including emergency equipment.

2.6.1 Owner's/Operator's continuing airworthiness responsibilities

OPS2(A)-2.6.1.1 Continuing airworthiness

The owner of an aeroplane, or in case where it is leased, the lessee, shall ensure that, in accordance with procedures acceptable to the Authority:

a) the aeroplane is maintained in an airworthy condition;

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

c) the certificate of airworthiness of the aeroplane remains valid.

OPS2(A)-2.6.1.2 Maintenance

The owner or lessee shall not operate the aeroplane unless:

1. maintenance on the aeroplane, including any associated engine, propeller and part, is carried out:
   a) by an organization that is approved, accepted or validated by the authority in accordance with Regeling Luchtwaardigheid Chapter III or
   b) by a person or organization in accordance with procedures authorized by the authority as per articles OPS2-3.8.2 and OPS2-3.11.1; and
2. there is a maintenance release in relation to the maintenance carried out.

OPS2(A)-2.6.1.3 Maintenance release

When the maintenance release is issued by a person as per OPS2(A)-2.6.1.2 (b), the person signing the maintenance release shall be in possession of an Aruban Maintenance Technician Licence

OPS2(A)-2.6.1.4 Maintenance programme

The owner or lessee shall ensure that the maintenance of the aeroplane is performed in accordance with a maintenance programme acceptable to the Authority, as the State of Registry.

2.6.2 Continuous Airworthiness records

OPS2(A)-2.6.2.1 Continuous Airworthiness records

The owner of an aeroplane, or in case where it is leased, the lessee, shall ensure that the following records are kept for the periods mentioned in OPS2(A)-2.6.2.2:

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

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

c) appropriate details of modifications and repairs;

d) the time in service (hours, calendar time and cycles, as appropriate) since the last overhaul of the aeroplane or its components subject to a mandatory overhaul life;

e) the current status of the aeroplane's compliance with the maintenance programme; and

f) the detailed maintenance records to show that all requirements for the signing of a maintenance release have been met.

OPS2(A)-2.6.2.2 Record keeping period

The records in OPS2-2.6.2.1 a) to e) shall be kept for a minimum period of 90 days after the unit to which they refer has been permanently withdrawn from service and the records in OPS2- 2.6.2.1 f) for a minimum period of one year after the signing of the maintenance release.

OPS2(a)-2.6.2.3 Transfer of records

In the event of a temporary change of owner or lessee, the records shall be made available to the new owner or lessee. In the event of any permanent change of, the records shall be transferred to the new owner or lessee.

Note 1.— Continuing airworthiness records or related documents, other than valid certificate of airworthiness, need not be carried in the aeroplane during international flights.

Note 2. —In the context of OPS2-2.6.2.3, a judgement on what should be considered as a temporary change of owner or lessee will need to be made by the Authority as the state of Registry in the light of the need to exercise control over the records, which will depend on access to these records and the opportunity to update these.

OPS2(A)-2.6.2.4 Form/Format record keeping

The records kept and transferred in accordance with 2.6.2 shall be maintained in a form and format that ensures readability, security and integrity of the records at all times.

2.6.3 Modifications and repairs

OPS2(A)-2.6.3 Modifications and repairs

a) All modifications and repairs shall comply with the requirements of Ministeriele Regeling Luchtwaadigheid articles 55, 56 or 57;

b) The operator shall submit all substantiating data to support compliance with the in OPS2-2.6.3(a) airworthiness requirements for approval or acceptance.

2.6.4 Maintenance release by AMO

OPS2(A)-2.6.4.1 Maintenance is carried out by an approved maintenance organization

When maintenance is carried out by an approved maintenance organization, the owner or lessee shall ensure that the maintenance release is issued and that it complies with the following:

a) be completed and signed to certify that the maintenance work performed has been completed satisfactorily and in accordance with approved data and the procedure described in the maintenance organization's procedures manual.

b) A maintenance release shall be signed and include the following:
   1) Basic details of the maintenance carried out including detailed reference to the data used;
   2) The date such maintenance was complete;
   3) The identity of the approved maintenance organization; and
   4) The identity of the person or persons signing the release.

OPS2(A)-2.6.4.2 Maintenance is not carried out by an approved maintenance organization

(a) When maintenance is carried out by a person in accordance with OPS2(A)-2.6.1.2 b), the owner or lessee shall ensure that the maintenance release is completed and signed by a person appropriately licensed in accordance with OPS2(A)-2.6.1.3 and to

certify that the maintenance work performed has been completed satisfactorily and in accordance with approved data and OPS2(A)-3.8.2 acceptable procedures.

(b) The maintenance release shall contain the following:

(I) basic details of the maintenance performed;

(II) the date such maintenance was completed, and;

(III) the identity of the authorized person or persons signing the release.

CHAPTER 2.7 AEROPLANE FLIGHT CREW

2.7.1 Composition of the flight crew

OPS2(A)-2.7.1.1 Number and composition of the flight

The number and composition of the flight crew shall not be less than that specified in the flight manual or other documents associated with the certificate of airworthiness.

2.7.2 Qualifications

OPS2(A)-2.7.2.1 Flight crew Qualifications

The pilot-in-command shall:

a) ensure that each flight crew member holds a valid licence or validation issued by the authority;

b) ensure that flight crew members are properly rated; and

c) be satisfied that flight crew members have maintained competency.

OPS2(A)-2.7.2.2 Qualifications for ACAS II

The pilot-in-command of an aeroplane equipped with an airborne collision avoidance system (ACAS II) shall ensure that each flight crew member has been appropriately trained to competency in the use of ACAS II equipment and the avoidance of collision.

Note.— Appropriate training, to the satisfaction of the authority, to competency in the use of ACAS II equipment and the avoidance of collisions may be evidenced, for example, by:

a) possession of a type rating for an aeroplane equipped with ACAS II, where the operation and use of ACAS II are included in the training syllabus for the type rating; or

b) possession of a document issued by a training organization or person approved by the authority to conduct training for pilots in the use of ACAS II, indicating that the holder has been adequately trained; or

c) a comprehensive pre-flight briefing by a pilot who has been trained in the use of ACAS II.

CHAPTER 2.8 MANUALS, LOGS AND RECORDS

2.8.1 Flight manual

OPS2(A)-2.8.1 Flight manual

The aeroplane flight manual shall be updated by implementing changes made mandatory by the authority.

2.8.2 Journey log book

OPS2(A)-2.8.2.1 Journey log book

A journey log book shall be maintained for every aeroplane engaged in international air navigation in which shall be entered particulars of the aeroplane, its crew and each journey.

OPS2(A)-2.8.2.2 Items in journey log

The aeroplane journey log should contain at least the following items:

a) aeroplane nationality and registration;

b) date;

c) crew member names and duty assignments;

d) departure and arrival points and times;

e) purpose of flight;

f) observations regarding the flight; and

g) signature of the pilot-in-command.

OPS2(A)-2.8.3 Records of emergency and survival equipment carried

The Operator of the aeroplane 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 the aeroplane 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.

CHAPTER 2.9 SECURITY

OPS2(A)-2.9.1 Security of aircraft

The pilot-in-command shall be responsible for the security of the aircraft during its operation.

OPS2(A)-2.9.2 Reporting acts of unlawful interference

Following an act of unlawful interference, the pilot-in-command shall submit a report of such an act to the authority and to the designated local authority in the State of Occurrence.

Note.— In the context of this chapter, the word "security" is used in the sense of prevention of acts of unlawful interference against civil aviation.

SECTION 3 LARGE AND TURBOJET AEROPLANES

CHAPTER 3.1 GENERAL

OPS2(A)-3.1.1 Applicability

The following operations shall be subject to the requirements of Section 2, and those of Section 3:

International general aviation operations with:

a) aeroplanes with a maximum certificated take-off mass exceeding 5 700 kg; or

b) aeroplanes equipped with one or more turbojet engines.

CHAPTER 3.2 CORPORATE AVIATION OPERATIONS

OPS2(A)-3.2.1 Corporate aviation

A corporate aviation operation involving three or more aircraft that are operated by pilots employed for the purpose of flying the aircraft should be conducted in accordance with Section 3.

Note.— The term "aircraft" is used to indicate that a corporate aviation operation using a mix of aeroplanes and helicopters is subject to this requirement as long as at least one aeroplane is involved.

CHAPTER 3.3 GENERAL

3.3.1 Compliance with laws, regulations and procedures

OPS2(A)-3.3.1.1 Compliance with laws, regulations and procedures - general

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

OPS2(A)-3.3.1.2 Compliance with laws, regulations and procedures – pilots & crewmembers

The Operator shall ensure that all pilots are familiar with the laws, regulations and procedures, pertinent to the performance of their duties, prescribed for the areas to be

traversed, the 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.

OPS2(A)-3.3.1.3 Operational Control

The pilot-in-command is responsible for operational control. The operator shall describe the operational control system in the operations manual and identify the roles and responsibilities of those involved with the system.

OPS2(A)-3.3.1.4 Availability of essential information

The Operator shall ensure that the pilot-in-command has 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.

OPS2(A)-3.3.1.5 Language proficiency

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

3.3.2 Safety Management

OPS2(A)-3.3.2.0 Safety Management system

The operator shall establish, implement, and maintain a safety management system in accordance with the framework elements contained in Attachment 9.

Note.— Information regarding the Safety Management manual can be found in Attachment 7, and 9.

OPS2(A)-3.3.2.1 Protection of Safety Data and Safety Information

The use of recordings or transcripts of CVR, CARS, Class A AIR and Class A AIRS are prohibited expect for purposes other than the investigation of an accident or incident as per Annex 13, except where the recordings or transcripts are:

a) related to a safety-related event identified in the context of a safety management system; are restricted to the relevant portions of a de-identified transcript of the recording; and are subject to the protections accorded by article 22b of the Luchtvaartverordening (AB1989 GT58);

b) sought for use in criminal proceedings not related to an event involving an accident or incident investigation and are subject to the protections accorded by Annex 19; or

c) used for inspections of flight recorder systems

OPS2(A)-3.3.3.2 Use of Safety Data and Safety Information

The use of recordings or transcripts of FDR, ADRS, Class B and C AIR, and Class B and C AIRS for purposes other than the investigation of an accident or incident as per Annex 13 are prohibited, except where the recordings or transcripts are subject to the protections accorded by Luchtvaartverordening (AB1989 GT58) and are:

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

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

c) de-identified; or

d) disclosed under secure procedures.

CHAPTER 3.4 FLIGHT OPERATIONS

3.4.1 Operating facilities

OPS2(A)-3.4.1.1 Availability Operating facilities

The Operator shall ensure that a flight will not be commenced unless it has been ascertained by every reasonable means available that the ground and/or water facilities including communication facilities and navigation aids available and directly required on such flight, for the safe operation of the aeroplane, are adequate for the type of operation under which the flight is to be conducted.

OPS2(A)-3.4.1.2 Adequacy of facilities and services

The operator, in making a decision on the adequacy of facilities and services available at an aerodrome of intended operation, shall assess the level of safety risk associated with the aircraft type and nature of the operation, in relation to the availability of rescue and firefighting services (RFFS).

Note .— "Reasonable means" in this requirement 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.

3.4.2 Operational management

OPS2(A)-3.4.2.1.1 Operator notification

(a) If the Operator has an operating base not located in Aruba, the Operator shall notify the State in which the operating base is located.

(b) Upon notification in accordance with (a), safety and security oversight shall be coordinated between the State in which the operating base is located and the Authority.

OPS2(A)- 3.4.2.2 Operations manual

The operator shall provide, for the use and guidance of personnel concerned, an operations manual containing all the instructions and information necessary for operations personnel to perform their duties. 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.

Note 1 .— Attachment 7 contains guidance on the organization and content of an operations manual.

Note 2 .— IS-BAO is an acceptable means to the Authority to structure the operations manual.

OPS2(A)-3.4.2.3 Operating instructions — general

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

(b) 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.

OPS2(A)-3.4.2.4 In-flight simulation of emergency situations

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

OPS2(A)-3.4.2.5 Checklists

Checklists shall be used by flight crews prior to, during and after all phases of operations, and in emergencies, 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. The design and utilization of checklists shall observe Human Factors principles.

OPS2(A)-3.4.2.6 Minimum flight altitudes

The operator shall specify, for flights which are to be conducted in accordance with the instrument flight rules, the method of establishing terrain clearance altitudes.

OPS2(A0-3.4.2.7 Aerodrome operating minima

The operator shall establish aerodrome operating minima, in accordance with criteria specified by the authority, for each aerodrome to be used in operations. Such minima shall not be lower than any that may be established for such aerodromes by the State of the Aerodrome, except when specifically approved by that State.

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

OPS2(A)-3.4.2.8 Fatigue management programme

The operator shall establish and implement a fatigue management programme that ensures that all operator personnel involved in the operation and maintenance of aircraft do not carry out their duties when fatigued. The programme shall address flight and duty times and be included in the operations manual.

OPS2(A)-3.4.2.9 Passengers

(a) The Operator shall ensure that passengers are made familiar with the location and use of:

1) seat belts;

2) emergency exits;

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

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

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

(b) The Operator shall ensure that all persons on board are aware of the location and general manner of use of the principal emergency equipment carried for collective use.

(c) The Operator shall ensure that in an emergency during flight, passengers are instructed in such emergency action as may be appropriate to the circumstances.

(d) 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 are secured in their seats by means of the seat belts or harnesses provided.

3.4.3 Flight preparation

OPS2(A)-3.4.3.1 Flight preparation procedures

The Operator shall develop procedures to ensure that a flight is not commenced unless:

a) the aeroplane is airworthy, duly registered and that appropriate certificates with respect thereto are aboard the aeroplane;

b) the instruments and equipment installed in the aeroplane are appropriate, taking into account the expected flight conditions;

c) any necessary maintenance has been performed in accordance with Chapter 3.8;

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

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

f) the aeroplane operating limitations, contained in the flight manual, or its equivalent, will not be exceeded.

OPS2(A)-3.4.3.2 Information climb performance

The Operator should make available sufficient information on climb performance with all engines operating to enable determination of the climb gradient that can be achieved during the departure phase for the existing take-off conditions and intended take-off technique.

OPS2(A)-3.4.3.3 Operational flight planning

The Operator shall specify flight planning procedures to provide 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. These procedures shall be included in the operations manual.

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

3.4.3.4 Alternate aerodromes

OPS2(A)-3.4.3.4.1.1 Take-off alternate aerodrome

A take-off alternate aerodrome shall be selected and specified in the flight plan if either the meteorological conditions at the aerodrome of departure are below the applicable aerodrome landing minima for that operation or if it would not be possible to return to the aerodrome of departure for other reasons.

OPS2(A)-3.4.3.4.1.2 Location take-off alternate aerodrome

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

a) for aeroplanes with two engines, one hour of flight time at a one-engine-inoperative cruising speed, determined from the aircraft operating manual, calculated in ISA and still-air conditions using the actual take-off mass; or

b) for aeroplanes with three or more engines two hours of flight time at an all-engines operating cruising speed, determined from the aircraft operating manual, calculated in ISA and still-air conditions using the actual take-off mass.

OPS2(A)-3.4.3.4.1.3 Information on take-off alternate aerodrome

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 applicable aerodrome operating minima for that operation.

3.4.3.5 Fuel requirements

OPS2(A)-3.4.3.5 Fuel requirements

(a) the operator shall establish a fuel planning and in-flight re-planning policy to ensure that the aeroplane carries a sufficient amount of usable fuel to complete the planned flight safely and to allow for deviations from the planned operation.

(b) The operator shall ensure that the fuel planning of flights is based on the following elements

1) procedures contained in the operations manual as well as :
   i) data provided by the aeroplane manufacturer; or
   ii) current aeroplane-specific data derived from a fuel/energy consumption monitoring system, if available,; and

2) the operating conditions under which the planned flight is to be conducted including:
   1) anticipated aeroplane mass;
   2) Notices to Airmen;
   3) current meteorological reports or a combination of current reports and forecasts;
   4) air traffic services procedures, restrictions and anticipated delays; and
   5) the effects of deferred maintenance items and/or configuration deviations.

Note .— Where no specific fuel consumption data exist for the precise conditions of the flight, the aircraft may be operated in accordance with estimated fuel consumption data.

c) The pre-flight calculation of usable fuel required shall include:

i) *taxi fuel/* which shall be the amount of fuel expected to be consumed before take-off taking into account local conditions at the departure aerodrome and auxiliary power unit (APU) fuel consumption;

ii) *trip fuel/*, which shall be the amount of fuel required to enable the aeroplane to fly from take-off until landing at the destination aerodrome taking into account the operating conditions of (b) (2);

iii) *contingency fuel*, which shall be the amount of fuel required to compensate for unforeseen factors. It shall be not less than five per cent of the planned trip fuel;

Note.— Unforeseen factors are those which could have an influence on the fuel consumption to the destination aerodrome, such as deviations of an individual aeroplane from the expected fuel consumption data, deviations from forecast meteorological conditions, extended delays and deviations from planned routings and/or cruising levels.

iv) *destination alternate fuel*, which shall be:

(i) where a destination alternate aerodrome is required, the amount of fuel required to enable the aeroplane to:

A) perform a missed approach at the destination aerodrome;

B) climb to the expected cruising altitude;

C) fly the expected routing;

D) descend to the point where the expected approach is initiated; and

E) conduct the approach and landing at the destination alternate aerodrome; or

(ii) where a flight is operated without a destination alternate aerodrome, the amount of fuel required to enable the aeroplane to fly for 15 minutes at holding speed at 450 m (1 500 ft) above destination aerodrome elevation in standard conditions; or

(iii) where the aerodrome of intended landing is an isolated aerodrome:

A) for a reciprocating engine aeroplane, the amount of fuel required to fly for 45 minutes plus 15 per cent of the flight time planned to be spent at cruising level, including final reserve fuel, or two hours, whichever is less; or

B) for a turbine-engined aeroplane, the amount of fuel required to fly for two hours at normal cruise

consumption above the destination aerodrome, including final reserve fuel;

v) *final reserve fuel*, which shall be the amount of fuel on arrival at the destination alternate aerodrome, or the destination aerodrome when no destination alternate aerodrome is required:

A) for a reciprocating engine aeroplane, the amount of fuel required to fly for 45 minutes; or

B) for a turbine-engined aeroplane, the amount of fuel required to fly for 30 minutes at holding speed at 450 m (1 500 ft) above aerodrome elevation in standard conditions;

vi) *additional fuel*, which shall be the supplementary amount of fuel required to enable the aircraft to descend as necessary and proceed to land at an alternate aerodrome in the event of engine failure or loss of pressurization based on the assumption that such a failure occurs at the most critical point along the route;

vii) *discretionary fuel*, which shall be the extra amount of fuel to be carried at the discretion of the Commander.

(d) Operators should determine one final reserve fuel value for each aeroplane type and variant in their fleet rounded up to an easily recalled figure.

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

Note. — Nothing in this provision precludes the in-flight amendment of a flight plan to re-plan that flight to another aerodrome, provided that the requirements of this provision can be complied with from the point where the flight is re-planned.

3.4.3.6 In-flight fuel management

OPS2(A)-3.4.3.6.1 Policies and procedures fuel management

The Operator shall establish policies and procedures to ensure that in-flight fuel checks and fuel management are performed.

OPS2(A)-3.4.3.6.2 Fuel management – pilot-in-command

(a) The pilot-in-command shall continually ensure that the amount of usable fuel remaining on board is not less than the fuel required to proceed to an aerodrome

where a safe landing can be made with the planned final reserve fuel remaining upon landing.

Note. — The protection of final reserve fuel is intended to ensure a safe landing at any aerodrome when unforeseen occurrences may not permit safe completion of an operation as originally planned.

(b) The pilot-in-command shall request delay information from ATC when unanticipated circumstances may result in landing at the destination aerodrome with less than the final reserve fuel plus any fuel required to proceed to an alternate aerodrome or the fuel required to operate to an isolated aerodrome.

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

Note. — The declaration of MINIMUM FUEL informs ATC that all planned aerodrome options have been reduced to a specific aerodrome of intended landing and any change to the existing clearance may result in landing with less than the planned final reserve fuel. This is not an emergency situation but an indication that an emergency situation is possible should any additional delay occur.

(d) The pilot-in-command shall declare a situation of fuel emergency by broadcasting MAYDAY MAYDAY MAYDAY FUEL when the calculated usable fuel estimated to be available upon landing at the nearest aerodrome where a safe landing can be made is less than the planned final reserve fuel.

Note. — The planned final reserve fuel refers to the value calculated in OPS2-3.4.3.5 (c) (v) and is the minimum amount of fuel required upon landing at any aerodrome.

OPS2(A)-3.4.3.7 Additional requirements for operations beyond 60 minutes to an en-route alternate aerodrome

When conducting operations beyond 60 minutes from a point on a route to an en-route alternate aerodrome operators should ensure that:

a) en-route alternate aerodromes are identified; and

b) the pilot-in-command has access to current information on the identified en-route alternate aerodromes, including operational status and meteorological conditions.

OPS2(A)-3.4.3.8 Refuelling with passengers on board

(a) 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.

(b) When refuelling with passengers embarking, on board or disembarking, two-way communication shall be maintained by the aeroplane's intercommunication 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 OPS2(A)-3.4.3.5 (a) do not necessarily require the deployment of integral aeroplane stairs or the opening of emergency exits as a prerequisite to refuelling.

Note 2. — Additional precautions are required when refuelling with fuels other than aviation kerosene or when refueling results in a mixture of aviation kerosene with other aviation turbine fuels, or when an open line is used.

OPS2(A)-3.4.3.9 Oxygen supply

(a) 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:

(i) 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

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

(b) 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.

3.4.4 In-flight procedures

OPS2(A)-3.4.4.1

The aircraft operating manual required in OPS2(A)-3.6.1(b), shall include operating procedures for conducting instrument approaches.

OPS2(A)-3.4.4.2 Use of oxygen

(a) 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 OPS2(A)-3.4.3.9 (a) or (b).

(b) 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.

OPS2(A)-3.4.4.5 Aeroplane procedures for landing performance

An approach to land shall not be continued below 300 m (1 000 ft) above aerodrome elevation unless the pilot-in-command is satisfied that, with the runway surface condition information available, the aeroplane performance information indicates that a safe landing can be made.

3.4.5 Duties of pilot-in-command

OPS2(A)-3.4.5 Duties of pilot-in-command

(a) The pilot-in-command shall ensure that the checklists specified in OPS2(A)-3.4.2.5 are complied with in detail.

(b) 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. In the event that the pilot-in-command is incapacitated the operator shall take the forgoing action.

(c) 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.

(d) The pilot-in-command shall be responsible for the journey logbook or the general declaration containing the information listed in 2.8.2.

3.4.6 Cabin baggage (take-off and landing)

OPS2(A)-3.4.6 Cabin baggage (take-off and landing)

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

CHAPTER 3.5 AEROPLANE PERFORMANCE OPERATING LIMITATIONS

OPS2(A)-3.5.1 General

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OPS2(A)-3.5.2 Applicable to aeroplanes certificated in accordance with Parts IIIA and IIIB of ICAO Annex 8

(a) The requirements contained in this chapter are applicable to aeroplanes of over 5 700 kg maximum certificated take-off mass intended for the carriage of passengers or cargo or mail in international air navigation.

(b) An aeroplane shall be operated in compliance with the terms of its Certificate of Airworthiness and within the approved operating limitations contained in its flight manual.

(c) The Operator shall take such precautions as are reasonably possible to ensure that the general level of safety contemplated by these provisions is maintained under all expected operating conditions, including those not covered specifically by the provisions of this chapter.

(d) A flight shall not be commenced unless the performance information provided in the flight manual indicates that the requirements of (e) to OPS2-3.5.6 can be complied with for the flight to be undertaken.

(e) In applying the requirements of this chapter, account shall be taken of all factors that significantly affect the performance of the aeroplane (such as: mass, operating procedures, the pressure altitude appropriate to the elevation of the aerodrome, runway slope, the ambient temperature, wind and surface conditions of the runway at the expected time of use, i.e. presence of slush, water and/or ice, for landplanes, water surface condition for seaplanes). Such factors shall be taken into account directly as operational parameters or indirectly by means of allowances or margins, which may be provided in the scheduling of performance data or in the comprehensive and detailed code of performance in accordance with which the aeroplane is being operated.

OPS2(A)-3.5.3 Mass limitations

a) The mass of the aeroplane at the start of take-off shall not exceed the mass at which OPS2-3.5.4 is complied with, or the mass at which OPS2(A)-3.5.5 and OPS2(A)-3.5.6 are complied with, allowing for expected reductions in mass as the flight proceeds,

and for such fuel jettisoning as is envisaged in applying OPS2(A)-3.5.5 and OPS2(A)-3.5.6 and, in respect of alternate aerodromes, OPS2(A)-3.5.3 c) and OPS2(A)-3.5.6.

b) In no case shall the mass at the start of take-off exceed the maximum take-off mass specified in the flight manual for the pressure altitude appropriate to the elevation of the aerodrome, and if used as a parameter to determine the maximum take-off mass, any other local atmospheric condition.

c) In no case shall the estimated mass for the expected time of landing at the aerodrome of intended landing and at any destination alternate aerodrome, exceed the maximum landing mass specified in the flight manual for the pressure altitude appropriate to the elevation of those aerodromes, and if used as a parameter to determine the maximum landing mass, any other local atmospheric condition.

d) In no case shall the mass at the start of take-off, or at the expected time of landing at the aerodrome of intended landing and at any destination alternate aerodrome, exceed the relevant maximum masses at which compliance has been demonstrated with the applicable noise certification Standards in ICAO Annex 16, Volume I, unless otherwise authorized in exceptional circumstances for a certain aerodrome or a runway where there is no noise disturbance problem, by the competent authority of the State in which the aerodrome is situated.

OPS2(A)-3.5.4 Take-off

(a) The aeroplane shall be able, in the event of a critical engine failing at any point in the take-off, either to discontinue the take-off and stop within either the accelerate-stop distance available or the runway available, or to continue the take-off and clear all obstacles along the flight path by an adequate margin until the aeroplane is in a position to comply with OPS2(A)-3.5.5.

(b) In determining the length of the runway available, account shall be taken of the loss, if any, of runway length due to alignment of the aeroplane prior to take-off.

OPS2(A)-3.5.5 En route — one engine inoperative

The aeroplane shall be able, in the event of the critical engine becoming inoperative at any point along the route or planned diversions therefrom, to continue the flight to an aerodrome at which the requirement of OPS2(A)-3.5.6 can be met, without flying below the minimum obstacle clearance altitude at any point.

OPS2(A)-3.5.6 Landing

The aeroplane shall, at the aerodrome of intended landing and at any alternate aerodrome, after clearing all obstacles in the approach path by a safe margin, be able to land, with assurance that it can come to a stop or, for a seaplane, to a satisfactorily low speed, within

the landing distance available. Allowance shall be made for expected variations in the approach and landing techniques, if such allowance has not been made in the scheduling of performance data.

CHAPTER 3.6 AEROPLANE INSTRUMENTS, EQUIPMENT AND FLIGHT DOCUMENTS

Note. —Specifications for the provision of aeroplane communication and navigation equipment are contained in Chapter 3.7.

OPS2(A)-3.6.1 General

(a) Where a master minimum equipment list (MMEL) is established for the aircraft type, the Operator shall include in the operations manual (or as a stand-alone document) a minimum equipment list (MEL) approved by the authority 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.

Note. — Attachment 8 and AMC-024 contain guidance on the minimum equipment list.

(b) 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 be consistent with the aircraft flight manual and checklists to be used and may be the original manufacturer manuals or designed by the operator. The design of the manual shall observe Human Factors principles.

OPS2(A)-3.6.2 Aeroplanes on all flights

(a) In addition to the requirements contained in OPS2(A)-2.4.2.2, an aeroplane shall be equipped with:

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

(ii) Medical supplies should comprise one or more first-aid kits.

(iii) 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;

(iv) 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.

(v) 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;

5) location of emergency equipment; and

6) location and method of opening emergency exits.

(b) An aeroplane shall carry:

(i) the operations manual prescribed in OPS2(A)-3.4.2.2, or those parts of it that pertain to flight operations;

(ii) the flight manual for the aeroplane, or other documents containing performance data required for the application of Chapter 3.5 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

(iii) the checklists to which OPS2(A)-3.4.2.5 refers.

3.6.3 Flight recorders

OPS2(A)-3.6.3.1 Flight data recorders - applicability

(a) All aeroplanes of a maximum certificated take-off mass of over 5 700 kg for which the individual certificate of airworthiness is first issued on or after 1 January 2005 shall be equipped with an FDR which shall record at least 78 parameters listed in Table A5-1 of Attachment 5.

(b) All aeroplanes of a maximum certificated take-off mass of over 27 000 kg for which the individual certificate of airworthiness is first issued on or after 1 January 1989 shall be equipped with an FDR which shall record at least the first 32 parameters listed in Table A5-1 of Attachment 5.

OPS2-3.6.3.2 Cockpit voice recorders Applicability

All turbine-engined aeroplanes of a maximum certificated take-off mass of over 5 700 kg for which the application for type certification is submitted to a Contracting State on or after 1 January 2016 and required to be operated by more than one pilot shall be equipped with a CVR.

OPS2(A)-3.6.3.2.2 Duration

All aeroplanes of a maximum certificated take-off mass of over 27 000 kg for which the individual certificate of airworthiness is first issued on or after 1 January 2022 shall be

equipped with a CVR capable of retaining the information recorded during at least the last twenty-five (25) hours of its operation.

OPS2(A)-3.6.3.3 FDR/CVR

All aeroplanes of a maximum certificated take-off mass over 5 700 kg, required to be equipped with an FDR and a CVR, may alternatively be equipped with two combination recorders (FDR/CVR).

OPS2(A)-3.6.3.4 Aeroplanes on long-range over-water flights

(a) The Operator of an aeroplane operated on an extended flight over water shall determine the risks to survival of the occupants of the aeroplane in the event of a ditching. The operator shall take into account the operating environment and conditions such as, but not limited to, sea state and sea and air temperatures, the distance from land suitable for making an emergency landing, and the availability of search and rescue facilities. Based upon the assessment of these risks, the operator shall, in addition to the equipment required in 2.4.4.3, ensure that the aeroplane is appropriately equipped with:

(i) life-saving rafts in sufficient numbers to carry all persons on board, stowed so as to facilitate their ready use in emergency, provided with such lifesaving equipment, including means of sustaining life, as is appropriate to the flight to be undertaken; and

(ii) equipment for making the distress signals described in the Air Traffic State Decree AB 2008 no44.

(b) Each life jacket and equivalent individual flotation device, when carried in accordance with 2.4.4.3, shall be equipped with a means of electric illumination for the purpose of facilitating the location of persons, except where the requirement of OPS2(A)-2.4.4.3.1 is met by the provision of individual flotation devices other than life jackets.

OPS2(A)-3.6.3.5 Aeroplanes for which the individual certificate of airworthiness was first issued before 1 January 1990

(a) Pressurized aeroplanes intended to be operated at flight altitudes at which the atmospheric pressure is less than 376 hPa shall be equipped with a device to provide positive warning to the flight crew of any dangerous loss of pressurization.

(b) An aeroplane intended to be operated at flight altitudes at which the atmospheric pressure is less than 700 hPa in personnel compartments shall be equipped with oxygen storage and dispensing apparatus capable of storing and dispensing the oxygen supplies required in OPS2(A)-3.4.3.9 (a).

(c) An aeroplane intended to be operated at flight altitudes at which the atmospheric pressure is less than 700 hPa but which is provided with means of maintaining pressures greater than 700 hPa in personnel compartments shall be provided with oxygen storage and dispensing apparatus capable of storing and dispensing the oxygen supplies required in OPS2(A)-3.4.3.9 (b).

OPS2(A)-3.6.4 Aeroplanes in icing conditions

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

OPS2(A)-3.6.5 Aeroplanes operated in accordance with the instrument flight rules

(a) In addition to the requirements contained in OPS2(A)-2.4.7, aeroplanes when operated in accordance with the instrument flight rules, or when the aeroplane cannot be maintained in a desired attitude without reference to one or more flight instruments, shall be equipped with two independent altitude measuring and display systems.

(b) Aeroplanes over 5 700 kg — Emergency power supply for electrically operated attitude indicating instruments

(i) Aeroplanes of a maximum certificated take-off mass of over 5 700 kg newly introduced into service after 1 January 1975 shall be fitted with an emergency power supply, independent of the main electrical generating system, for the purpose of operating and illuminating, for a minimum period of 30 minutes, an attitude indicating instrument (artificial horizon), clearly visible to the pilot-in-command. The emergency power supply shall be automatically operative after the total failure of the main electrical generating system and clear indication shall be given on the instrument panel that the attitude indicator(s) is being operated by emergency power.

(ii) Aircraft with advanced cockpit automation systems (glass cockpits) should have system redundancy that provides the flight crew with attitude, heading, airspeed and altitude indications in case of failure of the primary system or display.

(iii) Instruments that are used by any one pilot shall be so arranged as to permit the pilot to see their indications readily from his or her station, with the minimum practicable deviation from the position and line of vision normally assumed when looking forward along the flight path.

OPS2(A)-3.6.6 Pressurized aeroplanes when carrying passengers — weather-detecting equipment

Pressurized aeroplanes when carrying passengers shall be equipped with operative weather-detecting equipment capable of detecting thunderstorms whenever such aeroplanes are being operated in areas where such conditions may be expected to exist along the route either at night or under instrument meteorological conditions.

3.6.7

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OPS2(A)-3.6.8 Aeroplanes carrying passengers — cabin crew seats

(a) Aeroplanes for which the individual certificate of airworthiness is first issued on or after 1 January 1981

Aeroplanes shall be equipped with a forward or rearward facing seat (within 15 degrees of the longitudinal axis of the aeroplane), fitted with a safety harness for the use of each cabin crew member required to satisfy the intent of OPS2(A)-3.12.1 in respect of emergency evacuation.

(b) Aeroplanes for which the individual certificate of airworthiness was first issued before 1 January 1981

(i) Aeroplanes should be equipped with a forward or rearward facing seat (within 15 degrees of the longitudinal axis of the aeroplane), fitted with a safety harness for the use of each cabin crew member required to satisfy the intent of 3.12.1 in respect of emergency evacuation.

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

(ii) Cabin crew seats provided in accordance with OPS2(A)-3.6.8 shall be located near floor level and other emergency exits as required by the authority for emergency evacuation.

OPS2(A)-3.6.9 Aeroplanes required to be equipped with an airborne collision avoidance system (ACAS)

(a) ***Intentionally left blank.***

(b) All turbine-engined aeroplanes of a maximum certificated take-off mass in excess of 15 000 kg, or authorized to carry more than 30 passengers, for which the individual airworthiness certificate is first issued after 1 January 2007, shall be equipped with an

airborne collision avoidance system (ACAS II) that meets traffic alert and collision avoidance system (TCAS) Version 7.1 as specified in RTCA/DO-185B or EUROCAE/ED-143.

OPS2(A)-3.6.10 Aeroplanes required to be equipped with a pressure-altitude reporting transponder

Aeroplanes shall be equipped with a pressure-altitude reporting transponder which operates in accordance with the relevant provisions of ICAO Annex 10, Volume IV.

Note. —This provision is intended to improve the effectiveness of air traffic services as well as airborne collision avoidance systems.

OPS2(A)-3.6.11 Microphones

All flight crew members required to be on flight deck duty shall communicate through boom or throat microphones below the transition level/altitude.

CHAPTER 3.7 AEROPLANE COMMUNICATION, NAVIGATION AND SURVEILLANCE EQUIPMENT

OPS2(A)-3.7.1 Communication equipment

In addition to the requirements of OPS2(A)-2.5.1.1 and OPS2(A)-2.5.1.2, 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. — These requirements are considered fulfilled if the ability to conduct the communications specified therein is established during radio propagation conditions which are normal for the route.

OPS2(A)-3.7.2 Installation

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

OPS2(A)-3.7.3 Electronic navigation data management

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

(b) The operator shall implement procedures that ensure the timely distribution and insertion of current and unaltered electronic navigation data to all necessary aeroplanes.

CHAPTER 3.8 AEROPLANE CONTINUING AIRWORTHINESS

OPS2(A)-3.8.1 Operator's maintenance responsibilities

The Operator shall comply with the requirements of 2.6.1.

OPS2(A)-3.8.2 Operator's maintenance control manual

The Operator should provide a maintenance control manual, as specified in OPS(A)2-3.11.1, for the use and guidance of maintenance and operations personnel. The design of the manual should observe Human Factors principles.

OPS2(A)-3.8.3 Maintenance programme

(a) The Operator shall provide, for the use and guidance of maintenance and operational personnel concerned, a maintenance programme, acceptable to the authority, containing the information required by OPS2(A)-3.11.2. The design and application of the operator's maintenance programme shall observe Human Factors principles.

(b) Copies of all amendments to the maintenance programme shall be furnished promptly to all organizations or persons to whom the maintenance programme has been issued.

OPS2(A)-3.8.4 Continuing airworthiness information

(a) The Operator of an aeroplane of a maximum certificated take-off mass in excess of 5 700 kg shall ensure that the information on faults, malfunctions, defects and other occurrences that cause or might cause adverse effects on the continuing airworthiness of the aircraft is transmitted to the airframe, powerplant, or propeller Type Certificate holder, or Supplemental Type certificate holder, as appropriate, with a copy to the authority.

(b) The information, as mentioned in (a), that shall to be reported to the authority is further described in AMC-029.

OPS2(A)-3.8.5 Maintenance release

(a) When maintenance is carried out by an organization approved in accordance with OPS2(A)-2.6.1.2 a), the operator shall ensure that the maintenance release complies with following:

(i) A maintenance release shall be completed and signed to certify that the maintenance work performed has been completed satisfactorily and in accordance with approved data and the procedure described in the maintenance organization's procedures manual.

(ii) A maintenance release shall be signed and include the following:
1) Basic details of the maintenance carried out including detailed reference to the data used;
2) The date such maintenance was complete;
3) The identity of the approved maintenance organization; and
4) The identity of the person or persons signing the release.

(b) When maintenance is carried out by a person in accordance with OPS2(A)-2.6.1.2 b), the operator shall ensure that the maintenance release is completed and signed by a person appropriately licensed in accordance with OPS2(A)-2.6.1.3 and to certify that the maintenance work performed has been completed satisfactorily and in accordance with approved data and acceptable procedures.

(c) The maintenance release mentioned in OPS2(A)-3.8.5 (b) shall include the following :

(i) basic details of the maintenance performed;

(ii) the date such maintenance was completed, and;

(iii) the identity of the authorized person or persons signing the release.

CHAPTER 3.9 AEROPLANE FLIGHT CREW

3.9.1 Composition of the flight crew

OPS2(A)-3.9.1.1 Designation of pilot-in-command

For each flight the operator shall designate a pilot to act as pilot-in-command.

OPS2(A)-3.9.1.2 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.

OPS2(A)-3.9.2 Flight crew member emergency duties

The 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. Recurrent 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.

OPS2(A)-3.9.3 Flight crew member training programmes

(a) The operator shall establish and maintain a training programme that is designed to ensure that a person who receives training acquires and maintains the competency to perform assigned duties, including skills related to human performance.

(b) Ground and flight training programmes shall be established, either through internal programmes or through a training services provider, and shall include or make reference to a syllabus for those training programmes in the company operations manual.

(c) The training programme shall include training to competency for all equipment installed.

(d) Flight simulators should be used to the maximum extent practicable for initial and annual recurrent training.

3.9.4 Qualifications

OPS2(A)-3.9.4.1 Flight crew member licensing

(a) The operator shall:

(i) ensure that each flight crew member assigned to duty holds a valid licence issued or validated by the Authority;

(ii) ensure that flight crew members are properly rated; and

(iii) be satisfied that flight crew members are competent to carry out assigned duties.

(b) The operator of an aeroplane equipped with an airborne collision avoidance system (ACAS II) shall ensure that each flight crew member has been appropriately trained to competency in the use of ACAS II equipment and the avoidance of collisions.

Note.—Appropriate training, to the satisfaction of the authority, to competency in the use of ACAS II equipment and the avoidance of collisions may be evidenced, for example, by:

a) possession of a type rating for an aeroplane equipped with ACAS II, where the operation and use of ACAS II are included in the training syllabus for the type rating; or

b) possession of a document issued by a training organization or person approved by the authority to conduct training for pilots in the use of ACAS II, indicating that the holder has been trained in accordance with the appropriate requirements; or

c) a comprehensive pre-flight briefing by a pilot who has been trained in the use of ACAS II in accordance with the appropriate requirements.

OPS2(A)-3.9.4.2 Recent experience — pilot-in-command

The Operator shall not assign a pilot to act as pilot-in-command of an aeroplane unless that pilot has made at least three takeoffs and landings within the preceding 90 days on the same type of aeroplane or in a flight simulator approved for the purpose.

OPS2(A)-3.9.4.3 Recent experience — co-pilot

The Operator shall not assign a co-pilot to operate at the flight controls of an aeroplane during take-off and landing unless that pilot has made 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.

OPS2(A)-3.9.4.4 Pilot proficiency checks

The Operator shall ensure that piloting technique and the ability to execute emergency procedures is checked periodically in such a way as to demonstrate the pilot's competence. Where the operation may be conducted under the instrument flight rules, the operator shall ensure that the pilot's competence to comply with such rules is demonstrated to either a check pilot of the operator or a representative of the State issuing the pilot licence.

Note. —The periodicity of the checks referred to in this provision is dependent upon the complexity of both the aeroplane and the operation.

CHAPTER 3.10

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CHAPTER 3.11 MANUALS, LOGS AND RECORDS

OPS2(A)-3.11.1 Operator's maintenance control manual

The Operator's maintenance control manual provided in accordance with OPS2(A)-3.8.2, which may be issued in separate parts, should be developed according to industry codes of practice or to the authority's guidance material, and should at a minimum contain information about:

a) the means for complying with the procedures required by OPS2(A)-3.8.1;

b) the means of recording the names and duties of the person or persons required by OPS(A)-3.8.1;

c) the maintenance programme required by OPS2(A)-3.8.3;

d) the methods used for the completion and retention of the operator's maintenance records required by OPS2(A)-3.8.5;

e) the procedures for complying with the service information reporting requirements of Regeling Luchtwaardigheid articles 34, 35, 36 and AMC-029;

f) the procedures for implementing action resulting from mandatory continuing airworthiness information;

g) 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;

h) the aircraft types and models to which the manual applies;

i) the procedures for ensuring that unserviceabilities affecting airworthiness are recorded and rectified; and

j) procedures for advising the authority of significant in-service occurrences.

OPS2(A)-3.11.2 Maintenance programme

(a) A maintenance programme for each aeroplane as required by OPS2(A)-3.8.3 shall contain the following information:

(i) maintenance tasks and the intervals at which these are to be performed, taking into account the anticipated utilization of the aeroplane;

(ii) when applicable, a continuing structural integrity programme;

(iii) procedures for changing or deviating from a) and b) above as approved by the authority; and

(iv) when applicable and approved by the authority, condition monitoring and reliability programme descriptions for aircraft systems, components and engines.

(b) Maintenance tasks and intervals that have been specified as mandatory in approval of the type design, or approved changes to the maintenance programme, shall be identified as such.

(c) 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.

OPS2(A)-3.11.3 Flight recorder records

The owner of the aeroplane, or in the case where it is leased, the lessee of the aeroplane 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 ICAO Annex 13.

CHAPTER 3.12 CABIN CREW

OPS2(A)-3.12.1 Assignment of emergency duties

The requirement for cabin crew for each type of aeroplane shall be determined by the Operator, based on seating capacity or the number of passengers carried, in order to effect a safe and expeditious evacuation of the aeroplane, and the necessary functions to be performed in an emergency or a situation requiring emergency evacuation. The Operator shall assign these functions for each type of aeroplane.

OPS2(A)-3.12.2 Cabin crew at emergency evacuation stations

When cabin crew are utilised by the operator, each cabin crew member assigned to emergency evacuation duties shall occupy a seat provided in accordance with OPS2(A)-3.6.8 during take-off and landing and whenever the pilot-in-command so directs.

OPS2(A)-3.12.3 Protection of cabin crew during flight

Each cabin crew member shall be seated with seat belt or, when provided, safety harness fastened during take-off and landing and whenever the pilot-in-command so directs.

OPS2(A)-3.12.4 Training

(a) The Operator shall ensure that a training programme is completed by all persons before being assigned as a cabin crew member.

(b) The Operator should establish and maintain a cabin crew training programme that is designed to ensure that persons who receive training acquire and maintain the competency to perform their assigned duties and includes or makes reference to a syllabus for the training programme in the company operations manual.

ATTACHMENT 1: GENERAL AVIATION SPECIFIC APPROVALS

(Section 2, Chapter 2.1, OPS2(A)-2.1.4, refers)

AIRSPACE & SPECIFIC APPROVAL CERTIFICATE

No. **AAC-../…**	**ARUBA** **DEPARTMENT OF CIVIL AVIATION**	This certificate must be in the aircraft when operated
Logo Ministry		

ISSUING AUTHORITY & CONTACT DETAILS:[1]
Department of Civil Aviation Aruba
Address: Sabana Berde 73B, Oranjestad – Aruba
Telephone: (+297) 523-2665 FAX: (+297) 582—3038 E-mail: dca@dca.gov.aw

Name: Telephone:	**OWNER/ OPERATOR**[3] Address: Fax:	Email:
Nationality and Registration Marks: **P4-…**	Manufacturer and Manufacturer's Designation of Aircraft[4] **…. ….**	Aircraft Serial No. **……**

Airspace Approval(s):	**Equipment used for NAT HLA (MNPS):** **QTY, MFR, Model, Software**
RVSM: NAT HLA (MNPS):	…. ….

SPECIFIC APPROVAL	YES	NO	DESCRIPTION[5]		REMARKS
Low visibility operation					
Low Visibility Take-off (LVTO)	☐	☐	RVR[7]: RVR m		
CAT II & LVTO	☐	☐	RVR: RVR m	DH: DH ft	
CAT II/III & LVTO	☐	☐	RVR: RVR m	DH: DH ft	
HUD/EVS/SVS/CVS	☐	☐	[8]		
PBN Approval(s)[9]					
RNP AR:	☐	☐			
RNP APCH:	☐	☐			
RNAV 1 (P-RNAV):	☐	☐			
RNAV-2:	☐	☐			
RNAV 5 (B-RNAV):	☐	☐			
Basic RNP-1:	☐	☐			
RNP-4:	☐	☐			
RNP-10:	☐	☐			
ATS Comms & Surveillance					
ATNB1 CPDLC (Link 2000+):	☐	☐			
CPDLC (FANS1/A+):	☐	☐			
CPDLC (FANS1/A):	☐	☐			
CPDLC/ ADS-C (FANS1/A+):	☐	☐			
FMC WPR:	☐	☐			
ACARS ATS:	☐	☐			
ADS-B-OUT:	☐	☐			
PM-CPDLC:	☐	☐			
Operational Approval(s)					
ETDO (ETOPS):	☐	☐	Minutes:		
EFB[10]	☐	☐	Class:		
STEEP APPROACH	☐	☐	Airport:		

This certificate remains valid as long as the following conditions are met:
- The operator is responsible to ensure continuing validity of the airspace and specific approval(s) above in accordance with the approval reference mentioned above.
- The aircraft must be maintained in accordance with maintenance requirements applicable to the airspace and specific approval(s) above.
- The reliability of the affected components and systems shall be assured.
- The applicable Flight Crew Operation Procedures shall be complied with.

For the Director of Civil Aviation

Date of Issue[2]: dd-mm-yyy

Signature

Notes.—
1. Department of Civil Aviation of Aruba name and contact details, including the telephone country code and email .
2. Issuance date of the specific approval (dd-mm-yyyy) and signature of the authority representative.
3. Owner or operator's name and address.
4. Insert the aeroplane make, model and series, or master series, if a series has been designated. The CAST/ICAO taxonomy is available at: http://www.intlaviationstandards.org/.
5. List in this column the most permissive criteria for each specific approval or the approval type (with appropriate criteria).
6. Insert the applicable precision approach category (CAT II or IIIA, IIIB or IIIC). Insert the minimum RVR in metres and decision height in feet. One line is used per listed approach category.
7. Insert the approved minimum take-off RVR in metres, or the equivalent horizontal visibility if RVR is not used. One line per approval may be used if different approvals are granted.
8. List the airborne capabilities (e.g. automatic landing, HUD, EVS, SVS, CVS) and associated operational credit(s) granted.
9. Performance-based navigation (PBN): one line is used for each PBN AR navigation specification approval (e.g. RNP AR APCH), with appropriate limitations listed in the "Description" column.
10. List the EFB functions used for the safe operation of aeroplanes and any applicable limitations.
11. Other specific approvals or data can be entered here, using one line (or one multi-line block) per approval (e.g. specific approach operations approval, MNPS).

ATTACHMENT 2: CARRIAGE AND USE OF OXYGEN

Supplementary to OPS2(A)-2.2.3.8

INTRODUCTION

The performance of crew members and the well-being of passengers during flights at such altitudes where a lack of oxygen might result in impairment of faculties are of major concern. Research conducted in altitude chambers or by exposure to mountain elevations indicates that human tolerance could be related to the altitude concerned and the exposure time. In light of the above and to further assist the Commander in providing the oxygen supply intended by OPS2(A)-2.2.3.8 of this regulation, the following guidelines, are considered relevant.

1. OXYGEN SUPPLY

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

a) all crew members and at least 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 (10 000 feet)and 620 hPa;(13 000 feet) and

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

1.2 A flight to be operated with a pressurized aeroplane should not be commenced unless a sufficient quantity of stored breathing oxygen is carried to supply all 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 (25 000 feet), or which, if operated at flight altitudes at which the atmospheric pressure is more than 376 hPa (25 000 feet) 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.

2. USE OF OXYGEN

2.1 All flight crew members, when engaged in performing duties essential to the safe operation of an aeroplane in flight, should use breathing oxygen continuously whenever the circumstances prevail for which its supply has been indicated to be necessary in 1.1 or 1.2.

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

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*

ATTACHMENT 3: SPECIFICATIONS FOR NAVIGATION LIGHTS

(Section 2, Chapter 2.4, OPS2(A)-2.4.8, refers)

1. TERMINOLOGY

When the following terms are used in this Attachment, they have the following meanings:

Angles of coverage.

a) Angle of coverage A is formed by two intersecting vertical planes making angles of 70 degrees to the right and 70 degrees to the left respectively, looking aft along the longitudinal axis to a vertical plane passing through the longitudinal axis.

b) Angle of coverage F is formed by two intersecting vertical planes making angles of 110 degrees to the right and 110 degrees to the left respectively, looking forward along the longitudinal axis to a vertical plane passing through the longitudinal axis.

c) Angle of coverage L is formed by two intersecting vertical planes, one parallel to the longitudinal axis of the aeroplane, and the other 110 degrees to the left of the first, when looking forward along the longitudinal axis.

d) Angle of coverage R is formed by two intersecting vertical planes, one parallel to the longitudinal axis of the aeroplane, and the other 110 degrees to the right of the first, when looking forward along the longitudinal axis.

Horizontal plane. The plane containing the longitudinal axis and perpendicular to the plane of symmetry of the aeroplane.

Longitudinal axis of the aeroplane. A selected axis parallel to the direction of flight at a normal cruising speed, and passing through the centre of gravity of the aeroplane.

Making way. An aeroplane on the surface of the water is “making way” when it is under way and has a velocity relative to the water.

Under command. An aeroplane on the surface of the water is “under command” when it is able to execute manoeuvres as required by the International *Regulations for Preventing Collisions at Sea* for the purpose of avoiding other vessels.

Under way. An aeroplane on the surface of the water is “under way” when it is not aground or moored to the ground or to any fixed object on the land or in the water.

Vertical planes. Planes perpendicular to the horizontal plane.

Visible. Visible on a dark night with a clear atmosphere.

2. NAVIGATION LIGHTS TO BE DISPLAYED IN THE AIR

As illustrated in Figure 1, the following unobstructed navigation lights shall be displayed:

a) a red light projected above and below the horizontal plane through angle of coverage L;

b) a green light projected above and below the horizontal plane through angle of coverage R;

c) a white light projected above and below the horizontal plane rearward through angle of coverage A.

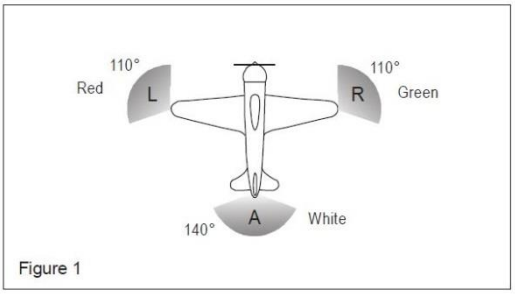


Figure 1

3. LIGHTS TO BE DISPLAYED ON THE WATER

3.1 General

Different lights are to be displayed in each of the following circumstances:

a) when under way;
b) when towing another vessel or aeroplane;
c) when being towed;
d) when not under command and not making way;
e) when making way but not under command;
f) when at anchor;
g) when aground.

The lights required by aeroplanes in each case are described below.

3.2 When under way

As illustrated in Figure 2, the following appearing as steady, unobstructed lights:

a) a red light projected above and below the horizontal through angle of coverage L;
b) a green light projected above and below the horizontal through angle of coverage R;
c) a white light projected above and below the horizontal through angle of coverage A; and
d) a white light projected through angle of coverage F.

The lights described in a), b) and c) should be visible at a distance of at least 3.7 km (2 NM). The light described in d) should be visible at a distance of 9.3 km (5 NM) when fitted to an aeroplane of 20 m or more in length or visible at a distance of 5.6 km (3 NM) when fitted to an aeroplane of less than 20 m in length.

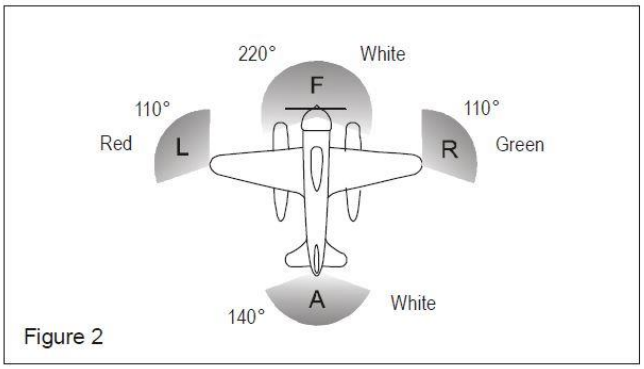


Figure 2

3.3 When towing another vessel or aeroplane

As illustrated in Figure 3, the following appearing as steady, unobstructed lights:

a) the lights described in 3.2;

b) a second light having the same characteristics as the light described in 3.2 d) and mounted in a vertical line at least 2 m above or below it; and

c) a yellow light having otherwise the same characteristics as the light described in 3.2 c) and mounted in a vertical line at least 2 m above it.

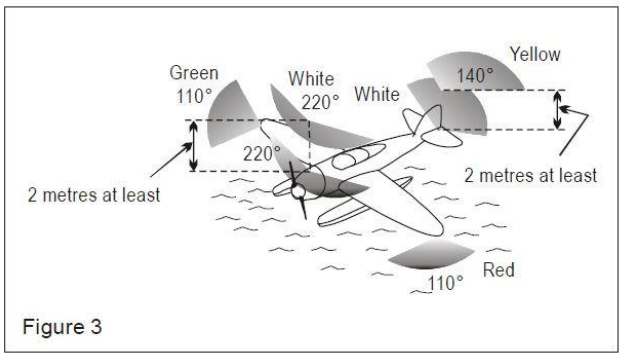


Figure 3

3.4 When being towed

The lights described in 3.2 a), b) and c) appearing as steady, unobstructed lights.

3.5 When not under command and not making way

As illustrated in Figure 4, two steady red lights placed where they can best be seen, one vertically over the other and not less than 1 m apart, and of such a character as to be visible all around the horizon at a distance of at least 3.7 km (2 NM).

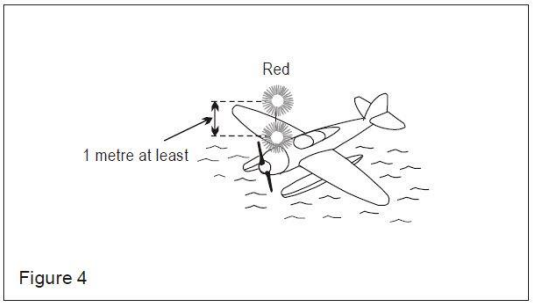


Figure 4

3.6 When making way but not under command

As illustrated in Figure 5, the lights described in 3.5 plus the lights described in 3.2 a), b) and c).

Note: The display of lights prescribed in 3.5 and 3.6 is to be taken by other aircraft as signals that the aeroplane showing them is not under command and cannot therefore get out of the way. They are not signals of aeroplanes in distress and requiring assistance.

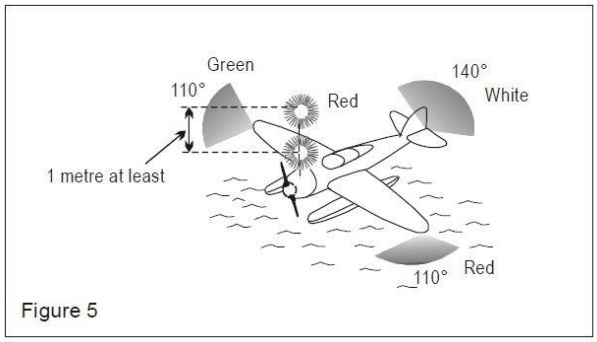


Figure 5

3.7 When at anchor

a) If less than 50 m in length, where it can best be seen, a steady white light (Figure 6), visible all around the horizon at a distance of at least 3.7 km (2 NM).

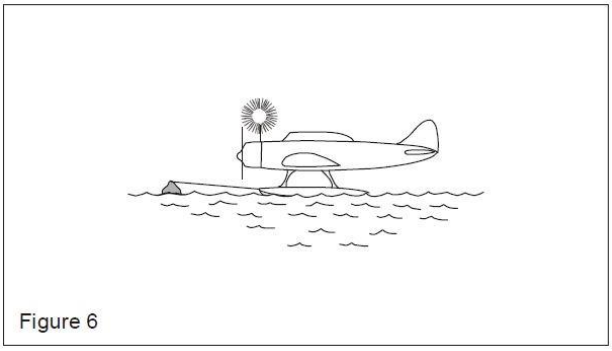


Figure 6

b) If 50 m or more in length, where they can best be seen, a steady white forward light and a steady white rear light (Figure 7) both visible all around the horizon at a distance of at least 5.6 km (3 NM).

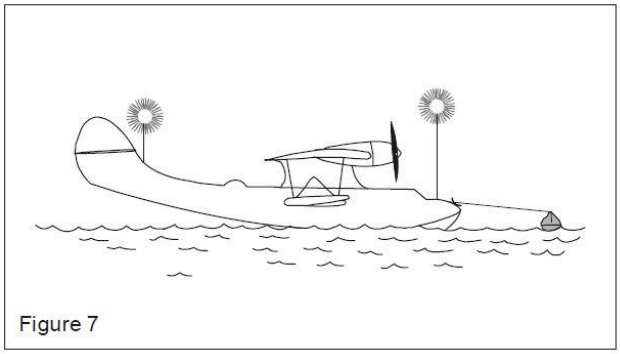
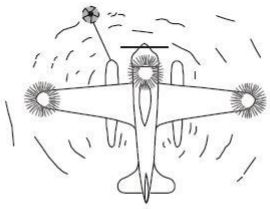


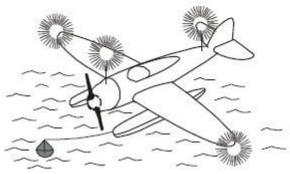
Figure 7

c) If 50 m or more in span a steady white light on each side (Figures 8 and 9) to indicate the maximum span and visible, so far as practicable, all around the horizon at a distance of at least 1.9 km (1 NM).



Less than 50 metres in length; 50 metres or more in span

Figure 8



50 metres or more in length; 50 metres or more in span

Figure 9

3.8 When aground

The lights prescribed in 3.7 and in addition two steady red lights in vertical line, at least 1 m apart so placed as to be visible all around the horizon.

ATTACHMENT 4: AUTOMATIC LANDING SYSTEMS, HEAD-UP DISPLAY (HUD) OR EQUIVALENT DISPLAYS AND VISION SYSTEMS

Supplementary to 2.2.2.2 and OPS2(A)-2.4.15

INTRODUCTION

The material in this attachment provides guidance for certified automatic landing systems, HUD or equivalent displays and vision systems intended for operational use in aircraft engaged in international air navigation. These systems and hybrid systems may be installed and operated to reduce workload, improve guidance, reduce flight technical error and enhance situational awareness and/or to obtain operational credits. Automatic landing systems, HUD or equivalent displays and vision systems may be installed separately or together as part of a hybrid system. Any operational credit for their use requires a specific approval from the authority.

Note 1:"Vision systems" is a generic term referring to the existing systems designed to provide images, i.e. enhanced vision systems (EVS), synthetic vision systems (SVS) and combined vision systems (CVS).

Note 2: Operational credit can be granted only within the limits of the airworthiness approval.

Note 3: Currently, operational credit has been given only to vision systems containing an image sensor providing a real-time image of the actual external scene on a HUD.

Note 4: More detailed information and guidance on HUD and EVS are contained in AMC-034.

1. HUD AND EQUIVALENT DISPLAYS

1.1 General

1.1.1 A HUD presents flight information into the pilot's forward external field of view without significantly restricting that external view.

1.1.2 Flight information should be presented on a HUD or an equivalent display, as required for the intended use.

1.2 Operational applications

1.2.1 Flight operations with a HUD can improve situational awareness by combining flight information located on head-down displays with the external view to provide pilots with more immediate awareness of relevant flight parameters and situation information while they continuously view the external scene. This improved situational awareness can also reduce errors in flight operations and improve the pilot's ability to transition between instrument and visual references as meteorological conditions change.

1.2.2 A HUD may be used to supplement conventional flight deck instrumentation or as primary flight displays if certified for this purpose.

1.2.3 An approval HUD may:
a) qualify for operations with reduced visibility or reduced RVR; or
b) replace some parts of the ground facilities such as touchdown zone and/or centre line lights.

1.2.4 The functions of a HUD may be provided by a suitable equivalent display. However, before such systems can be used, the appropriate airworthiness approval should be obtained.

1.3 HUD training

Training and recent experience requirements for operations using HUD or equivalent displays is established by the authority. The training addresses all flight operations for which the HUD or equivalent display is used. Please refer to AMC-034.

2. VISION SYSTEMS

2.1 General

2.1.1 Vision systems can display electronic real-time images of the actual external scene achieved through the use of image sensors, i.e. EVS, or display synthetic images, which are derived from the on-board avionic systems, i.e. SVS. Vision systems can also consist of a combination of these two systems called combined vision systems (CVS). Such a system may display electronic real-time images of the external scene using the EVS component of the system. The information from vision systems may be displayed head-up and/or head-down. Operational credit may be granted to vision systems which are appropriately qualified.

2.1.2 Light emitting diode (LED) lights may not be visible to infrared-based vision systems. Operators of such vision systems will need to acquire information about the LED implementation programmes at aerodromes where they intend to operate.

2.2 Operational applications

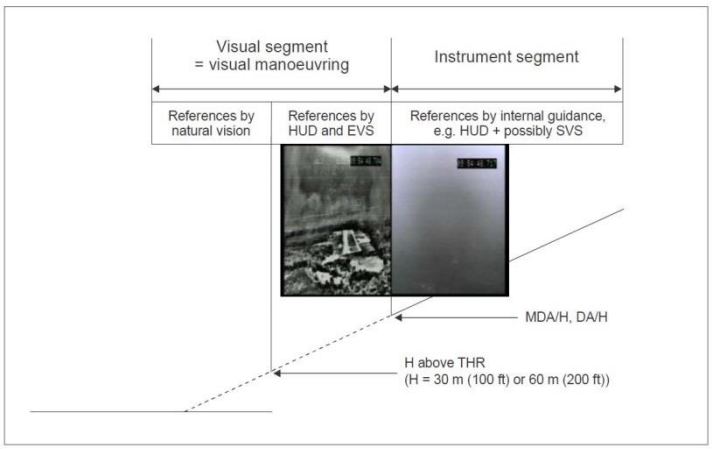
2.2.1 Flight operations with EVS allow the pilot to view an image of the external scene obscured by darkness or other visibility restrictions. The use of EVS will also allow acquisition of an image of the external scene earlier than with natural, unaided vision, hence providing for a smoother transition to references by natural vision. The improved acquisition of an image of the external scene may improve situational awareness. It may also qualify for operational credit if the information from the vision system is presented to the pilots in a suitable way and the necessary airworthiness approval and specific approval by the authority have been obtained for the combined system.

2.2.2 Vision system imagery may also enable pilots to detect other aircraft on the ground, terrain or obstructions on the, or adjacent to runways or taxiways.

2.3 Operational concepts

2.3.1 Instrument approach operations include an instrument phase and a visual phase. The instrument phase ends at the published MDA/H or DA/H unless a missed approach is initiated. Using the EVS or CVS does not change the applicable MDA/H or DA/H. The continued approach to landing from MDA/H or DA/H will be conducted using visual references. This also applies to operations with vision systems. The difference is that the visual references will be acquired by use of an EVS or CVS, natural vision or the vision system in combination with natural vision.

2.3.2 Down to a defined height in the visual segment, typically at or above 30 m (100 ft), the visual references may be acquired solely by means of the vision system. The defined height depends on the airworthiness approval and the specific approval by the authority. Below this height the visual references should be solely based on natural vision. In the most advanced applications, the vision system may be used down to touchdown without the requirement for natural vision acquisition of visual references. This means that such a vision system may be the sole means of acquiring visual references and can be used without natural vision.



2.4 Vision systems training

Training and recent experience requirements is established by the authority. The training addresses all flight operations for which the vision system is used. Please refer to AMC-034.

2.5 Visual references

In principle, the required visual references do not change due to the use of an EVS or CVS, but those references are allowed to be acquired by means of the vision system until a certain height during the approach as described in 2.3.2.

3. HYBRID SYSTEMS

A hybrid system generically means that two or more systems are combined. The hybrid system typically has improved performance compared to each of the component systems, which in turn may qualify for operational credit. The inclusion of systems in the hybrid system normally enhances the performance of the system.

4. OPERATIONAL CREDITS

4.1 Aerodrome operating minima are expressed in terms of minimum visibility/RVR and MDA/H or DA/H. When aerodrome operating minima are established, the combined capability of the aircraft equipment and on-ground infrastructure should be taken into account. Better equipped aircraft may be able to operate into lower natural visibility conditions, lower DA/H and/or operate with less ground infrastructure. Operational credit means that the aerodrome operating minima may be reduced in case of suitably equipped aircraft. Another way to grant operational credit is to allow visibility requirements to be fulfilled, wholly or partly, by means of the on-board systems. HUD, automatic landing or vision systems, which were not available at the time the criteria for aerodrome operating minima were originally established.

4.2 The granting of operational credits does not affect the classification (i.e. Type or Category) of an instrument approach procedure since they are designed to support instrument approach operations conducted with aircraft with the minimum equipment prescribed.

4.3 The relation between the procedure design and the operation can be described as follows. The OCA/H is the end product of the procedure design, which does not contain any RVR or visibility values. Based on the OCA/H and all the other elements such as available runway visual aids, the operator will establish MDA/H or DA/H and RVR/visibility, i.e. the aerodrome operating minima. The values derived should not be less than those that may be prescribed by the State of the Aerodrome.

5. OPERATIONAL PROCEDURES

In accordance with Chapter 2.4, 2.4.15.2, the operator should develop suitable operational procedures associated with the use of an automatic landing system, a HUD or an equivalent display, vision systems and hybrid systems. These procedures should be included in the operations manual and cover at least the following:

a) limitations;
b) operational credits;
c) flight planning;
d) ground and airborne operations;
e) crew resource management;
f) standard operating procedures; and
g) ATS flight plans and communication.

6. APPROVALS

6.1 General

6.1.1 The Operator that wishes to conduct operations with an automatic landing system, a HUD or equivalent display, vision system or hybrid system will need to meet certain criteria and, in some instances, obtain specific approvals (see Chapter 2.2, 2.2.2.2 and Chapter 2.4, OPS2(A)-2.4.15). The extent of the approvals will depend on the intended operation and the complexity of the equipment.

6.1.2 Systems may be used to improve situational awareness without a specific approval. However, the standard operating procedures for these systems should be specified in the operations manual or equivalent document. An example of this type of operation may include an EVS or an SVS on a head-down display that is used only for situational awareness of the surrounding area of the aircraft during ground operations where the display is not in the pilot's primary field of view. For enhanced situational awareness, the installation and operational procedures need to ensure that the operation of the vision system does not interfere with normal procedures or the operation or use of other aircraft systems. In some cases, modifications to these normal procedures for other aircraft systems or equipment may be necessary to ensure compatibility.

6.1.3 Chapter 2.2, OPS2(A)-2.2.2.2.1.1 states that operational credits based on the use of an automatic landing system, a HUD or an equivalent display, EVS, SVS or CVS or any combination of those systems into a hybrid system, should be specifically approved.

6.1.4 The authority has established criteria for the use of an automatic landing system, a HUD or an equivalent display, EVS, SVS or CVS or any combination of those systems into a hybrid system "for the safe operation of an aeroplane". When operational credits are granted by the authority as per the requirement in Chapter 2.2, OPS2(A)-2.2.2.2.1.1, the use of that system becomes essential for the safety of those operations and approval of the use of such systems is part of the operational credit specific approval. The use of these systems solely for enhanced situational awareness, reduced flight technical error and/or reduced workload is an important safety feature, but does not require a specific approval.

6.1.5 Any operational credit that has been granted should be reflected in the specific approval template and be carried on board the particular aeroplane.

6.2 Specific approvals for operational credit

6.2.1 To obtain operational credit the Operator will need to specify the desired operational credit and submit an application in accordance with Chapter 2.1, OPS2(A)-2.1.4 The content of a suitable application should include:

a) *Applicant details*. The official name and any business or trading name(s), address, mailing address, email address and contact telephone/fax numbers of the applicant.

b) *Aircraft details*. Aircraft make(s), model(s) and registration mark(s).

c) *Operator's vision system compliance list*. The contents of the compliance list is included in AMC-034. The compliance list should include the information that

is relevant to the approval requested and the registration marks of the aircraft involved. If more than one type of aircraft/fleet is included in a single application, a completed compliance list should be included for each aircraft/fleet.

d) *Documents to be included with the application*. Copies of all documents to which the operator has made references should be included in the application. There should be no need to send complete manuals; only the relevant sections/pages should be required.

e) *Name, title and signature*.

6.2.2 The following items should be covered in a vision systems compliance list:

a) reference documents used in compiling the submission for approval;

b) flight manual;

c) feedback and reporting of significant problems;

d) requested operational credit and resulting aerodrome operating minima;

e) operations manual (or an equivalent document) entries including MEL (where applicable) and standard operating procedures;

f) safety risk assessment;

g) training programmes; and

h) continuing airworthiness.

ATTACHMENT 5: FLIGHT RECORDERS

(Section 2, Chapter 2.4, 2.4.16, refers)

The material in this Attachment concerns flight recorders intended for installation in aeroplanes engaged in international air navigation. Crash-protected flight recorders comprise one or more of the following:

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

When image or data link information is required to be recorded on a crash-protected flight recorder, it is permissible to record it on either the CVR or the FDR.

Lightweight flight recorders comprise one or more of the following:

- an aircraft data recording system (ADRS),
- a cockpit audio recording system (CARS),
- an airborne image recording system (AIRS)
- and/or a data link recording system (DLRS).

When image or data link information is required to be recorded on a lightweight flight recorder, it is permissible to record it on either the CARS or the ADRS.

1. GENERAL REQUIREMENTS

1.1 Non-deployable flight recorder containers shall be painted a distinctive orange colour.

1.2 Non-deployable crash-protected flight recorder containers shall

a) carry reflective material to facilitate their location; and;

b) have securely attached a automatically activated underwater locating device operating at a frequency of 37.5 kilohertz (kHz). At the earliest practical date, but not later than 1 January 2018, this device shall operate for a minimum of ninety (90) days.

Note: Current industry practice is to phase out yellow flight recorder containers at the end of the service life of the flight recorders.

1.3 Automatic deployable flight recorder containers shall:

a) be painted a distinctive orange colour, however the surface visible from outside the aircraft may be of another colour;

b) carry reflective material to facilitate their location; and

c) have an integrated automatically activated ELT.

1.4 The flight recorder systems shall be installed so that:

a) the probability of damage to the recordings is minimized;

b) there is an aural or visual means for pre-flight checking that the flight recorder systems are operating properly; and

c) if the flight recorder systems have an erasure device, the installation shall be designed to prevent operation of the device during flight time or crash impact; and

d) aeroplanes for which the individual certificate of airworthiness is first issued on or after 1 January 2023, a flight crew-operated erase function shall be provided on the flight deck which, when activated, modifies the recording of a CVR and AIR so that it cannot be retrieved using normal replay or copying techniques. The installation shall be designed to prevent activation during flight. In addition, the probability of an inadvertent activation of an erase function during an accident shall also be minimized.

Note.— The erase function is intended to prevent access to CVR and AIR recordings by normal replay or copying means, but would not prevent accident investigation authorities access to such recordings by specialized replay or copying techniques.

1.5 The crash protected flight recorders shall be installed so that they receive electrical power from a bus that provides the maximum reliability for operation of the flight recorders without jeopardizing service to essential or emergency loads.

1.6 The lightweight flight recorders shall be connected to a power source having the characteristics which ensure proper and reliable recording in the operational environment.

1.7 The flight recorder systems, when tested by methods approved by the appropriate certificating authority, shall be demonstrated to be suitable for the environmental extremes over which they are designed to operate.

1.8 Means shall be provided for an accurate time correlation between the recorder systems recordings.

1.9 The flight recorder system manufacturer shall provide the appropriate certificating authority with the following information in respect of the flight recorder systems:

a) manufacturer's operating instructions, equipment limitations and installation procedures; and

b) parameter origin or source and equations which relate counts to units of measurement; and

c) manufacturer's test reports; and

d) detailed information to ensure continued serviceability of the flight recorder system.

1.10 The holder of the airworthiness approval for the installation design of the flight recorder system shall make available the relevant continuing airworthiness information to the operator of the aeroplane to be incorporated in the continuing airworthiness maintenance programme. This continuing airworthiness information shall cover in detail all the tasks required to ensure the continued serviceability of the flight recorder system.

Note 1.— The flight recorder system is composed of the flight recorder as well as any dedicated sensors, hardware and software that provide information required per this Attachment.

2. FLIGHT DATA RECORDER (FDR) AND AIRCRAFT DATA RECORDING SYSTEM (ADRS)

2.1 Start and stop locic

The FDR or ADRS shall start to record prior to the aeroplane moving under its own power and record continuously until the termination of the flight when the aeroplane is no longer capable of moving under its own power.

2.2 Parameters to be recorded

2.2.1 The parameters that satisfy the requirements for FDRs are listed in Table A5-1. The number of parameters to be recorded shall depend on aeroplane complexity. The parameters without an asterisk (*) are mandatory parameters which shall be recorded regardless of aeroplane complexity. In addition, the parameters designated by an asterisk (*) shall be recorded if an information data source for the parameter is used by aeroplane systems or the flight crew to operate the aeroplane. However, other parameters may be substituted with due regard to the aeroplane type and the characteristics of the recording equipment.

2.2.2 If further FDR recording capacity is available, recording of the following additional information should be considered:

a) operational information from electronic display systems, such as electronic flight instrument systems (EFIS), electronic centralized aircraft monitor (ECAM) and engine indication and crew alerting system (EICAS). Use the following order of priority:

1) parameters selected by the flight crew relating to the desired flight path, e.g. barometric pressure setting, selected altitude, selected airspeed, decision height, and autoflight system engagement and mode indications if not recorded from another source;

2) display system selection/status, e.g. SECTOR, PLAN, ROSE, NAV, WXR, COMPOSITE, COPY, ETC.;

3) warnings and alerts; and

4) the identity of displayed pages for emergency procedures and checklists; and

b) retardation information including brake application for use in the investigation of landing overruns and rejected take-offs.

2.2.3 The parameters that satisfy the recommendations for flight path and speed as displayed to the pilot(s) are listed below. The parameters without an (*) are mandatory parameters which shall be recorded. In addition, the parameters designated by an (*) are to be recorded if an information source for the parameter is displayed to the pilot and is practicable to record:
— Pressure altitude
— Indicated airspeed or calibrated airspeed
— Heading (primary flight crew reference)
— Pitch attitude
— Roll attitude
— Engine thrust/power
— Landing gear status*
— Total or outside air temperature*
— Time*
— Navigation data*: Drift angle, wind speed, wind direction, latitude/longitude
— Radio altitude*

2.2.4 The parameters that satisfy the requirements for ADRS are the first 7 parameters listed in Table A5-3

2.2.5 If further ADRS recording capacity is available, the recording of any parameters from 8 onwards defined in Table A5-3 shall be considered.

2.3 Additional information

2.3.1 The measurement range, recording interval and accuracy of parameters on installed equipment shall be verified by methods approved by the appropriate certificating authority.

2.3.2 Documentation concerning parameter allocation, conversion equations, periodic calibration and other serviceability/maintenance information shall be maintained by the operator/owner. The documentation shall be sufficient to ensure that accident investigation authorities have the necessary information to read out the data in engineering units.

3. COCKPIT VOICE RECORDER (CVR) AND COCKPIT AUDIO RECORDING SYSTEM (CARS)

3.1Start and stop logic

The CVR or CARS shall start to record prior to the aeroplane moving under its own power and record continuously until the termination of the flight when the aeroplane is no longer capable of moving under its own power. In addition, depending on the availability of electrical power, the CVRor CARS shall start to record as early as possible during the cockpit checks prior to engine start at the beginning of the flight until the cockpit checks immediately following engine shutdown at the end of the flight.

3.2 Signals to be recorded

3.2.1 The CVR shall record simultaneously on four separate channels, or more, at least the following:

a) voice communication transmitted from or received in the aeroplane by radio;

b) aural environment on the flight deck;

c) voice communication of flight crew members on the flight deck using the aeroplane's interphone system, if installed;

d) voice or audio signals identifying navigation or approach aids introduced in the headset or speaker; and

e) digital communications with ATS, unless recorded by the FDR.

3.2.2 The preferred CVR audio allocation should be as follows:

a) pilot-in-command audio panel;

b) co-pilot audio panel;

c) additional flight crew positions and time reference; and

d) cockpit area microphone.

3.2.3 The CARS shall record simultaneously on two separate channels, or more, at least the following:

a) voice communication transmitted from or received in the aeroplane by radio;

b) aural environment on the flight deck; and

c) voice communication of flight crew members on the flight deck using the aeroplane's interphone system, if installed.

3.2.4 The preferred CARS audio allocation should be as follows:

a) voice communication; and

b) aural environment on the flight deck.

4. AIRBORNE IMAGE RECORDER (AIR) AND AIRBORNE IMAGE RECORDING SYSTEM (AIRS)

4.1 Start and stop logic

The AIR or AIRS must start to record prior to the aeroplane moving under its own power and record continuously until the termination of the flight when the aeroplane is no longer capable of moving under its own power. In addition, depending on the availability of electrical power, the AIR or AIRS shall start to record as early as possible during the cockpit checks prior to engine start at the beginning of the flight until the cockpit checks immediately following engine shutdown at the end of the flight.

4.2 Classes

4.1.1 A Class A AIR or AIRS captures the general cockpit area in order to provide data supplemental to conventional flight recorders.

Note 1: To respect crew privacy, the cockpit area view may be designed as far as practical to exclude the head and shoulders of crew members whilst seated in their normal operating position.

Note 2: There are no provisions for Class A AIR or AIRS in this document.

4.1.2 A Class B AIR or AIRS captures data link message displays.

4.1.3 A Class C AIR or AIRS captures instruments and control panels.

Note: A Class C AIR or AIRS may be considered as a means for recording flight data where it is not practical or is prohibitively expensive to record on an FDR or an ADRS, or where an FDR is not required.

5. DATA LINK RECORDER (DLR)

5.1 Applications to be recorded

5.1.1 Where the aircraft flight path is authorized or controlled through the use of data link messages, all data link messages, both uplinks (to the aircraft) and downlinks (from the aircraft), shall be recorded on the aircraft. As far as practicable, the time the messages were displayed to the flight crew and the time of the responses shall be recorded.

Note.— Sufficient information to derive the content of the data link communications message and the time the messages were displayed to the flight crew is needed to determine an accurate sequence of events on board the aircraft.

5.1.2 Messages applying to the applications listed in table *A5-2* shall be recorded. Applications without the asterisk (*) are mandatory applications which shall be recorded regardless of the system complexity. Applications with an (*) shall be recorded only as far as is practicable given the architecture of the system.

6. INSPECTIONS OF FLIGHT RECORDER SYSTEMS

6.1 Prior to the first flight of the day, the built-in test features for the flight recorders and flight data acquisition unit (FDAU), when installed, shall be monitored by manual and/or automatic checks.

6.2 FDR systems or ADRS, CVR systems or CARS, and AIR systems or AIRS shall have recording system inspection intervals of one year; subject to the approval from the appropriate regulatory authority, this period may be extended to two years provided these systems have demonstrated a high integrity of serviceability and self-monitoring. DLR systems or DLRS shall have recording system inspection intervals of two years; subject to the approval from the appropriate regulatory authority, this period may be extended to four years provided these systems have demonstrated high integrity of serviceability and self-monitoring.

6.3 Recording inspections shall be carried out as follows:

a) an analysis of the recorded data from the flight recorders shall ensure that the recorder operates correctly for the nominal duration of the recording;

b) the FDR or ADRS recording from a complete flight shall be examined in engineering units to evaluate the validity of all recorded parameters. Particular attention shall be given to parameters from sensors dedicated to the FDR or ADRS. Parameters taken from the aircraft's electrical bus system need not be checked if their serviceability can be detected by other aircraft systems;

c) the readout facility shall have the necessary software to accurately convert the recorded values to engineering units and to determine the status of discrete signals;

d) an examination of the recorded signal on the CVR or CARS shall be carried out by replay of the CVR or CARS recording. While installed in the aircraft, the CVR or CARS shall record test signals from each aircraft source and from relevant external sources to ensure that all required signals meet intelligibility standards;

e) where practicable, during the examination, a sample of in-flight recordings of the CVR or CARS shall be examined for evidence that the intelligibility of the signal is acceptable; and

f) an examination of the recorded images on the AIR or AIRS shall be carried out by replay of the AIR or AIRS recording. While installed in the aircraft, the AIR or AIRS shall record test images from each aircraft source and from relevant external sources to ensure that all required images meet recording quality standards.

g) an examination of the recorded messages on the DLR or DLRS shall be carried out by replay of the DLR or DLRS recording.

6.4 A flight recorder system shall be considered unserviceable if there is a significant period of poor quality data, unintelligible signals, or if one or more of the mandatory parameters is not recorded correctly.

6.5 A report of the recording system inspection shall be made available on request to regulatory authorities for monitoring purposes.

6.6 Calibration of the FDR system:

a) for those parameters which have sensors dedicated only to the FDR and are not checked by other means, recalibration shall be carried out at least every five years or in accordance with the recommendations of the sensor manufacturer to determine any discrepancies in the engineering conversion routines for the mandatory parameters, and to ensure that parameters are being recorded within the calibration tolerances; and

b) when the parameters of altitude and airspeed are provided by sensors that are dedicated to the FDR system, there shall be a recalibration performed as recommended by the sensor manufacturer, or at least every two years.

Table A5-1 Parameter characteristics for flight data recorders

Serial number	Parameter	Applicability	Measurement range	Maximum sampling and recording interval (seconds)	Accuracy limits (sensor input compared to FDR readout)	Recording resolution
1	Time (UTC when available, otherwise relative time count or GNSS time sync)		24 hours	4	±0.125%/h	1 s
2	Pressure altitude		–300 m (–1 000 ft) to maximum certificated altitude of aircraft +1 500 m (+5 000 ft)	1	±30 m to ±200 m (±100 ft to ±700 ft)	1.5 m (5 ft)
3	Indicated airspeed or calibrated airspeed		95 km/h (50 kt) to max Vso (Note 1) Vso to 1.2 V_D (Note 2)	1	±5% ±3%	1 kt (0.5 kt recommended)
4	Heading (primary flight crew reference)		360°	1	±2°	0.5°
5	Normal acceleration (Note 3)		–3 g to +6 g	0.125	±1% of maximum range excluding datum error of ±5%	0.004 g
6	Pitch attitude		±75° or usable range whichever is greater	0.25	±2°	0.5°
7	Roll attitude		±180°	0.25	±2°	0.5°
8	Radio transmission keying		On-off (one discrete)	1		
9	Power on each engine (Note 4)		Full range	1 (per engine)	±2%	0.2% of full range

						or the resolution required to operate the aircraft
10*	Trailing edge flap and cockpit control selection		Full range or each discrete position	2	±5% or as pilot's indicator	0.5% of full range or the resolution required to operate the aircraft
11*	Leading edge flap and cockpit control selection		Full range or each discrete position	2	±5% or as pilot's indicator	0.5% of full range or the resolution required to operate the aircraft
12*	Thrust reverser position		Stowed, in transit, and reverse	1 (per engine)		
13*	Ground spoiler/speed brake selection (selection and position)		Full range or each discrete position	1	±2% unless higher accuracy uniquely required	0.2% of full range
14	Outside air temperature		Sensor range	2	±2°C	0.3°C
15*	Autopilot/auto throttle/AFCS mode and engagement status		A suitable combination of discretes	1		
	Note.— The preceding 15 parameters satisfy the requirements for a Type II FDR.					
16	Longitudinal acceleration (Note 3)		±1 g	0.25	±0.015 g excluding a datum error of ±0.05 g	0.004 g
17	Lateral acceleration (Note 3)		±1 g	0.25	±0.015 g excluding a datum error of ±0.05 g	0.004 g
18	Pilot input and/or control surface position-primary controls (pitch, roll, yaw) (Notes 3 and 5)	Application for type certification submitted to a Contracting State before 1 January 2016	Full range	0.25	±2° unless higher accuracy uniquely required	0.2% of full range or as installed
		Application for type certification submitted to a Contracting State on or after 1 January 2016	Full range	0.125	±2° unless higher accuracy uniquely required	0.2% of full range or as installed
19	Pitch trim position		Full range	1	±3% unless higher accuracy uniquely required	0.3% of full range or as installed
20*	Radio altitude		–6 m to 750 m (–20 ft to 2 500 ft)	1	±0.6 m (±2 ft) or ±3% whichever is greater below 150 m (500 ft) and ±5% above 150 m (500 ft)	0.3 m (1 ft) below 150 m (500 ft) 0.3 m (1 ft) + 0.5% of full range above 150 m (500 ft)

21*	Vertical beam deviation (ILS/GPS/GLS glide path MLS elevation, IRNAV/IAN vertical deviation)		Signal range	1	±3%	0.3% of full range
22*	Horizontal beam deviation (ILS/GPS/GLS localizer, MLS azimuth, IRNAV/IAN lateral deviation)		Signal range	1	±3%	0.3% of full range
23	Marker beacon passage		Discrete	1		
24	Master warning		Discrete	1		
25	Each NAV receiver frequency selection (Note 6)		Full range	4	As installed	
26*	DME 1 and 2 distance (includes distance to runway threshold (FLS) and distance to missed approach point (IRNAV/IAN) (Notes 6 and 7)		0–370 km (0–200 NM)	4	As installed	1 852 m (1 NM)
27	Air/ground status		Discrete	1		
28*	GPWS/TAWS/GCAS status (selection of terrain display mode including pop-up display status) and (terrain alerts, both cautions and warnings, and advisories) and (on/off switch position)		Discrete	1		
29*	Angle of attack		Full range	0.5	As installed	0.3% of full range
30*	Hydraulics, each system (low pressure)		Discrete	2		0.5% of full range
31*	Navigation data (latitude/longitude, ground speed and drift angle) (Note 8)		As installed	1	As installed	
32*	Landing gear and gear selector position		Discrete	4	As installed	
33*	Groundspeed		As installed	1	Data should be obtained from the most accurate system	1 kt
34	Brakes (left and right brake pressure, left and right brake		(Maximum metered brake range, discretes or full range)	1	±5%	2% of full range

	pedal position)					
35*	Additional engine parameters (EPR, N1, indicated vibration level, N2, EGT, fuel flow, fuel cut-off lever position, N3) engine fuel metering valve position)	Engine fuel metering valve position: Application for type certification is submitted to a Contracting State on or after 1 January 2023	As installed	Each engine each second	As installed	2% of full range
36*	TCAS/ACAS (traffic alert and collision avoidance system)		Discrete(s)	1	As installed	
37*	Wind shear warning		Discrete	1	As installed	
38*	Selected barometric setting (pilot, co-pilot)		As installed	64	As installed	0.1 mb (0.01 in-Hg)
39*	Selected altitude (all pilot selectable modes of operation)		As installed	1	As installed	Sufficient to determine crew selection
40*	Selected speed (all pilot selectable modes of operation)		As installed	1	As installed	Sufficient to determine crew selection
41*	Selected Mach (all pilot selectable modes of operation)		As installed	1	As installed	Sufficient to determine crew selection
42*	Selected vertical speed (all pilot selectable modes of operation)		As installed	1	As installed	Sufficient to determine crew selection
43*	Selected heading (all pilot selectable modes of operation)		As installed	1	As installed	Sufficient to determine crew selection
44*	Selected flight path (all pilot selectable modes of operation) (course/DSTRK, path angle, final approach path (IRNAV/IAN))			1	As installed	As installed
45*	Selected decision height		As installed	64	As installed	Sufficient to determine crew seleccion
46*	EFIS display format (pilot, copilot)		Discrete(s)	4	As installed	
47*	Multi-function/engine/alerts		Discrete(s)	4	As installed	

	display format					
48*	AC electrical bus status		Discrete(s)	4	As installed	
49*	DC electrical bus status		Discrete(s)	4	As installed	
50*	Engine bleed valve position		Discrete(s)	4	As installed	
51*	APU bleed valve position		Discrete(s)	4	As installed	
52*	Computer failure		Discrete(s)	4	As installed	
53*	Engine thrust command		As installed	2	As installed	2% of full range
54*	Engine thrust target		As installed	4	As installed	2% of full range
55*	Computed centre of gravity		As installed	64	As installed	1% of full range
56*	Fuel quantity in CG trim tank		As installed	64	As installed	1% of full range
57*	Head-up display in use		As installed	4	As installed	
58*	Para-visual display on/off		As installed	1	As installed	
59*	Operational stall protection, stick shaker and pusher activation		As installed	1	As installed	
60*	Primary navigation system reference (GNSS, INS, VOR/DME, MLS, Loran C, localizer glide slope)		As installed	4	As installed	
61*	Ice detection		As installed	4	As installed	
62*	Engine warning each engine vibration		As installed	1	As installed	
63*	Engine warning each engine over temperature		As installed	1	As installed	
64*	Engine warning each engine oil pressure low		As installed	1	As installed	
65*	Engine warning each engine over speed		As installed	1	As installed	
66*	Yaw trim surface position		Full range	2	±3% unless higher accuracy uniquely required	0.3% of full range
67*	Roll trim surface position		Full range	2	±3% unless higher accuracy uniquely required	0.3% of full range
68*	Yaw or sideslip angle		Full range	1	±5%	0.5°
69*	De-icing and/or anti-icing systems selection		Discrete(s)	4		
70*	Hydraulic pressure (each system)		Full range	2	±5%	100 psi

71*	Loss of cabin pressure		Discrete	1		
72*	Cockpit trim control input Position, Pitch		Full range	1	±5%	0.2% of full range or as installed
73*	Cockpit trim control input Position, Roll		Full range	1	±5%	0.2% of full range or as installed
74*	Cockpit trim control input Position,Yaw		Full range	1	±5%	0.2% of full range or as installed
75	All cockpit flight control input forces (control wheel, control column, rudder pedal)		Full range (±311 N (±70 lbf), ±378 N (±85 lbf), ±734 N (±165 lbf))	1	±5%	0.2% of full range or as installed
76*	Event marker		Discrete	1	64	
77*	Date		365 days			
78*	Actual navigation performance or estimated position error or estimated position uncertainty		As installed	4	As installed	
79	Cabin pressure altitude	Application for type certification submitted to a Contracting State on or after 1 January 2023	As installed (0 ft to 40 000 ft recommended)	1	As installed	100 ft
80	Aeroplane computed weight	Application for type certification submitted to a Contracting State on or after 1 January 2023	As installed	64	As installed	1% of full range
81	Flight director command (left flight director pitch command, left flight director roll command, right flight director pitch command, right flight director roll command)	Application for type certification submitted to a Contracting State on or after 1 January 2023	Full range	1	± 2º	0.5°
82	Vertical speed	Application for type certification submitted to a Contracting State on or after 1 January 2023	As intalled	0.25	As installed (32 ft/min recommended)	16 ft/min

Notes.—

1. Vso stalling speed or minimum steady flight speed in the landing configuration is in Section “Abbreviations and Symbols”.
2. VD design diving speed.
3. Record sufficient inputs to determine power.

4. For aeroplanes with control systems in which movement of a control surface will back drive the pilot's control, "or" applies. For aeroplanes with control systems in which movement of a control surface will not back drive the pilot's control, "and" applies. In aeroplanes with split surfaces, a suitable combination of inputs is acceptable in lieu of recording each surface separately. In aeroplanes with independent pilot input on primary controls, each pilot input on primary controls needs to be recorded separately.
5. If signal available in digital form.
6. Recording of latitude and longitude from INS or other navigation system is a preferred alternative.
7. If signals readily available.
8. It is not intended that aeroplanes issued with an individual certificate of airworthiness before 1 January 2016 be modified to meet the measurement range, maximum sampling and recording intervals, accuracy limits or recording resolution guidance description detailed in this Attachment.

Table A5-2. Description of applications for data link recorders

Item No.	Application type	Application description	Recording content
1	Data link initiation	This includes any applications used to log on to or initiate data link service. In FANS-1/A and ATN, these are ATS facilities notification (AFN) and context management (CM), respectively.	C
2	Controller-pilot communication	This includes any application used to exchange requests, clearances, instructions and reports between the flight crew and controllers on the ground. In FANS-1/A and ATN, this includes the CPDLC application. It also includes applications used for the exchange of oceanic (OCL) and departure clearances (DCL) as well as data link delivery of taxi clearances.	C
3	Addressed surveillance	This includes any surveillance application in which the ground sets up contracts for delivery of surveillance data. In FANS-1/A and ATN, this includes the automatic dependent surveillance — contract (ADS-C) application. Where parametric data are reported within the message they shall be recorded unless data from the same source are recorded on the FDR.	C
4	Flight information	This includes any service used for delivery of flight information to specific aircraft. This includes, for example, data link aviation weather report service (D-METAR), data link-automatic terminal service (D-ATIS), digital Notice to Airmen (D-NOTAM) and other textual data link services.	C
5	Aircraft broadcast surveillance	This includes elementary and enhanced surveillance systems, as well as automatic dependent surveillance — broadcast (ADS-B) output data. Where parametric data sent by the aeroplane are reported within the message they shall be recorded unless data from the same source are recorded on the FDR.	M*
6	Aeronautical operational control data	This includes any application transmitting or receiving data used for aeronautical operational control purposes (per the ICAO definition of operational control).	M*

Key:
C: Complete contents recorded.
M: Information that enables correlation to any associated records stored separately from the aeroplane.
*: Applications that are to be recorded only as far as is practicable given the architecture of the system.

Table A5-3. Parameter guidance for aircraft data recording systems

No.	Parameter name	Minimum recording range	Maximum recording interval in seconds	Minimum recording accuracy	Minimum recording resolution	Remarks
1	Heading a) Heading (Magnetic or True) b) Yaw rate	±180° ±300°/s	1 0.25	±2° ±1% + drift of 360°/h	0.5° 2°/s	*Heading is preferred, if not available yaw rate shall be recorded
2	Pitch a) Pitch attitude b) Pitch rate	±90° 300°/s	0.25 0.25	±2° ±1% + drift of 360°/h	0.5° 2°/s	* Pitch altitude is preferred, if not available, pitch rate shall be recorded
3	Roll a) Roll attitude	±180°	0.25	±2°	0.5°	* If not available, roll rate shall be recorded
	b) Roll rate	±300°/s	0.25	±1% + drift of 360°/h	2°/s	
4	Positioning system:					
	a) time*	24 hours	1	±0.5 s	0.1 s	* UTC time preferred where available.
	b)latitude/longitude	Latitude: ±90° Longitude: ±180°	2 (1 if available)	As installed (0.00015° recommended)	0.00005°	
	c) altitude	–300 m (–1 000 ft) to maximum certificated altitude of aircraft + 1 500 m (5 000 ft)	2 (1 if available)	As installed (±15 m (±50 ft) recommended)	1.5 m (5 ft)	
	d) ground speed	0–1 000 kt	2 (1 if available)	As installed (±5 kt recommended)	1 kt	
	e) Track	0-360°	2 (1 if available)	As installed (±2° recommended)	0.5°	
	f) estimated error	Available range	2 (1 if available)	As installed	As installed	*Shall be recorded if readily available
5	Normal acceleration	–3 g to +6 g (*)	0.25 (0.125 if available)	As installed (±0.09 g excluding a datum error of ±0.45 g recommended)	0.004 g	

6	Longitudinal acceleration	±1 g (*)	0.25 (0.125 if available)	As installed (±0.015 g excluding a datum error of ±0.05 g recommended)	0.004 g	
7	Lateral acceleration	±1 g (*)	0.25 (0.125 if available)	As installed (±0.015 g excluding a datum error of ±0.05 g recommended)	0.004 g	
8	External static pressure (or pressure altitude)	34.4 mb (3.44 in-Hg) to 310.2 mb (31.02 in-Hg) or available sensor range	1	As installed (±1 mb (0.1 in-Hg) or ±30 m (±100 ft) to ±210 m (±700 ft) recommended)	0.1 mb (0.01 in-Hg) or 1.5 m (5 ft)	
9	Outside air temperature (or total air temperature)	–50° to +90°C or available sensor range	2	As installed (±2°C recommended)	1°C	
10	Indicated air speed	As the installed pilot display measuring system or available sensor range	1	As installed (±3% recommended)	1 kt (0.5 kt recommended)	
11	Engine RPM	Full range including overspeed condition	Each engine each second	As installed	0.2% of full range	
12	Engine oil pressure	Full range	Each engine each second	As installed (5% of full range recommended)	2% of full range	
13	Engine oil temperature	Full range	Each engine each second	As installed (5% of full range recommended)	2% of full range	
14	Fuel flow or pressure	Full range	Each engine each second	As installed	2% of full range	
15	Manifold pressure	Full range	Each engine each second	As installed	0.2% of full range	
16	Engine thrust/power/torque parameters required to determine propulsive thrust/power*	Full range	Each engine each second	As installed	0.1% of full range	* Sufficient parameters e.g. EPR/N1 or torque/Np as appropriate to the particular engine shall be recorded to

						determine power in both normal and reverse thrust. A margin for possible overspeed should be provided.
17	Engine gas generator speed (Ng)	0–150%	Each engine each second	As installed	0.2% of full range	
18	Free power turbine speed (Nf)	0–150%	Each engine each second	As installed	0.2% of full range	
19	Coolant temperature	Full range	1	As installed (±5°C recommended)	1°C	
20	Main voltage	Full range	Each engine each second	As installed	1 Volt	
21	Cylinder head temperature	Full range	Each cylinder each second	As installed	2% of full range	
22	Flaps position	Full range or each discrete position	2	As installed	0.5°	
23	Primary flight control surface position	Full range	0.25	As installed	0.2% of full range	
24	Fuel quantity	Full range	4	As installed	1% of full range	
25	Exhaust gas temperature	Full range	Each engine each second	As installed	2% of full range	
26	Emergency voltage	Full range	Each engine each second	As installed	1 Volt	
27	Trim surface position	Full range or each discrete position	1	As installed	0.3% of full range	
28	Landing gear position	Each discrete position*	Each gear every two seconds	As installed		* Where available, record up-and-locked and down-and-locked position
29	Novel/unique aircraft features	As required	As required	As required	As required	

ATTACHMENT 6: ALTIMETRY SYSTEM PERFORMANCE REQUIREMENTS FOR OPERATIONS IN RVSM AIRSPACE

(Section 2, Chapter 2.5, OPS2(A)-2.5.2.8, refers)

1. In respect of groups of aeroplanes that are nominally of identical design and build with respect to all details that could influence the accuracy of height-keeping performance, the height-keeping performance capability shall be such that the total vertical error (TVE) for the group of aeroplanes shall have a mean no greater than 25 m (80 ft) in magnitude and shall have a standard deviation no greater than $28 - 0.013z^2$ for $0 \leq z \leq 25$ when z is the magnitude of the mean TVE in metres, or $92 - 0.004z^2$ for $0 \leq z \leq 80$ where z is in feet. In addition, the components of TVE shall have the following characteristics:

   a) the mean altimetry system error (ASE) of the group shall not exceed 25 m (80 ft) in magnitude;

   b) the sum of the absolute value of the mean ASE and of three standard deviations of ASE shall not exceed 75 m (245 ft); and

   c) the differences between cleared flight level and the indicated pressure altitude actually flown shall be symmetric about a mean of 0 m, with a standard deviation no greater than 13.3 m (43.7 ft), and in addition, the decrease in the frequency of differences with increasing difference magnitude shall be at least exponential.

2. In respect of aeroplanes for which the characteristics of the airframe and altimetry system fit are unique and so cannot be classified as belonging to a group of aeroplanes encompassed by paragraph 1, the height-keeping performance capability shall be such that the components of the TVE of the aeroplane have the following characteristics:

   a) the ASE of the aeroplane shall not exceed 60 m (200 ft) in magnitude under all flight conditions; and

   b) the differences between the cleared flight level and the indicated pressure altitude actually flown shall be symmetric about a mean of 0 m, with a standard deviation no greater than 13.3 m (43.7 ft), and in addition, the decrease in the frequency of differences with increasing difference magnitude shall be at least exponential.

3. (As per Section 2, Chapter 2.5, OPS2(A)-2.5.2.9, refers).

   a) With respect to adequate provision the Operators shall ensure that:

      i. the calibration interval of applicable height measuring devices, as required by Continue Airworthiness Inspection 2007/001 is incorporated in the Aircraft Maintenance Program. And that the Maintenance Program is approved by the authority; and

ii. The measuring interval as per AUA-OPS2(A)-2.5.2.10 is complied with; and

iii. form INS-16.012 is submitted in timely manner annually to the Authority.

b) With respect immediate corrective action mentioned in AUA-OPS2(A)-2.5.2.9(b), the operator shall ensure:

i. that the process for notifying the Authority is described in the operators MCM and that it is complied with;

ii. that the authority is notified with 72 hours;

iii. that the operation in the RVSM airspace is not to be conducted;

ATTACHMENT 7: COMPANY OPERATIONS MANUAL

Supplementary to OPS2(A)-3.4.2.2

The following is the suggested content of a company operations manual. It may be issued in separate parts corresponding to specific aspects of an operation. It should include the instructions and information necessary to enable the personnel concerned to perform their duties safely and shall contain at least the following information:

a) table of contents;
b) amendment control page and list of effective pages, unless the entire document is reissued with each amendment and the document has an effective date on it;
c) duties, responsibilities and succession of management and operating personnel;
d) operator safety management system;
e) operational control system;
f) MEL procedures (where applicable);
g) normal flight operations;
h) standard operating procedures (SOPs);
i) weather limitations;
j) flight and duty time limitations;
k) emergency operations;
l) accident/incident considerations;
m) personnel qualifications and training;
n) record keeping;
o) a description of the maintenance control system;
p) security procedures (where applicable);
q) performance operating limitations;
r) use/protection of FDR/CVR records (where applicable);
s) handling of dangerous goods; and
t) use of automatic landing systems, a HUD or equivalent displays and EVS, SVS or CVS equipment as applicable.

ATTACHMENT 8: MINIMUM EQUIPMENT LIST (MEL)

Supplementary to OPS2(A)-3.6.1

1. If deviations from the requirements of States in the certification of aircraft were not permitted, an aircraft could not be flown unless all systems and equipment were operable. Experience has proved that some unserviceability can be accepted in the short term when the remaining operative systems and equipment provide for continued safe operations.
2. The State should indicate through approval of a minimum equipment list those systems and items of equipment that may be inoperative for certain flight conditions with the intent that no flight can be conducted with inoperative systems and equipment other than those specified.
3. A minimum equipment list, approved by the State of the Operator, is therefore necessary for each aircraft, based on the master minimum equipment list established for the aircraft type by the organization responsible for the type design in conjunction with the State of Design.
4. The State of the Operator should require the operator to prepare a minimum equipment list designed to allow the operation of an aircraft with certain systems or equipment inoperative provided an acceptable level of safety is maintained.
5. The minimum equipment list is not intended to provide for operation of the aircraft for an indefinite period with inoperative systems or equipment. The basic purpose of the minimum equipment list is to permit the safe operation of an aircraft with inoperative systems or equipment within the framework of a controlled and sound programme of repairs and parts replacement.
6. Operators are to ensure that no flight is commenced with multiple minimum equipment list items inoperative without determining that any interrelationship between inoperative systems or components will not result in an unacceptable degradation in the level of safety and/or undue increase in the flight crew workload.
7. The exposure to additional failures during continued operation with inoperative systems or equipment should also be considered in determining that an acceptable level of safety is being maintained. The minimum equipment list may not deviate from requirements of the flight manual limitations section, emergency procedures or other airworthiness requirements of the State of Registry or of the State of the Operator unless the appropriate airworthiness authority or the flight manual provides otherwise.
8. Systems or equipment accepted as inoperative for a flight should be placarded where appropriate and all such items should be noted in the aircraft technical log to inform the flight crew and maintenance personnel of the inoperative system or equipment.
9. For a particular system or item of equipment to be accepted as inoperative, it may be necessary to establish a maintenance procedure, for completion prior to flight, to deactivate or isolate the system or equipment. It may similarly be necessary to prepare an appropriate flight crew operating procedure.
10. The responsibilities of the pilot-in-command in accepting an aeroplane for operation with deficiencies in accordance with a minimum equipment list are specified in OPS2-2.2.3.1.

ATTACHMENT 9: SAFETY MANAGEMENT SYSTEM FRAMEWORK

Supplementary to 3.3.2

Note. – Guidance on the implementation of the framework for an SMS and for the acceptance by the authority of the SMS, is contained in the Safety Management Manual (SMM) (Doc 9859).

This Appendix specifies the framework for the implementation and maintenance of a Safety Management system (SMS). The framework comprises four components and twelve elements as the minimum requirements for SMS implementation:

1. Safety policy and objectives

1.1. Management commitment

1.1.1. The operator shall define its safety policy which shall:

a) reflect operator commitment regarding safety, including the promotion of a positive safety culture;

b) include a clear statement about the provision of the necessary resources for the implementation of the safety policy;

c) include safety reporting procedures;

d) clearly indicate which types of behaviours are unacceptable related to the operator's aviation activities and include the circumstances under which disciplinary action would not apply;

e) be signed by the accountable manager of the operator;

f) be communicated, with visible endorsement, throughout the operator; and

g) be periodically reviewed to ensure it remains relevant and appropriate to the operator.

1.1.2. Taking due account of its safety policy, the operator shall define safety objectives. The safety objectives shall:

a) form the basis for safety performance monitoring and measurement;

b) reflect the operator's commitment to maintain or continuously improve the overall effectiveness of the SMS;

c) be communicated throughout the operator; and

d) be periodically reviewed to ensure they remain relevant and appropriate to the operator.

1.2. Safety accountability and responsibilities

The operator shall:

a) identify the accountable manager who, irrespective of other functions, is accountable on behalf of the operator for the implementation and maintenance of an effective SMS;

b) clearly define lines of safety accountability throughout the operator, including a direct accountability for safety on the part of management;

c) identify the responsibilities of all members of management, irrespective of other functions, as well as of employees, with respect to the safety performance of the operator;

d) document and communicate safety accountability, responsibilities and authorities throughout the operator; and

e) define the levels of management with authority to make decisions regarding safety risk tolerability; and

f) define the responsibility with respect to external interfaces.

1.3. Appointment of key safety personnel

The operator shall appoint a safety manager who is responsible for the implementation and maintenance of the SMS. The safety manager is allowed to fulfil other role(s) within the organization provided these do not cause a conflict of interest.

1.4. Coordination of emergency response planning

The operator should, in cooperation with other stakeholders, develop, coordinate and maintain an emergency response plan (ERP) that ensures orderly and safe transition from normal to emergency operations and return to normal operations. The ERP should provide the actions to be taken by the operator or specified individuals in an emergency and reflect the size, nature and complexity of the activities performed by the operator.

1.5. SMS documentation

1.5.1. The operator shall develop and maintain an SMS manual that describes its:

a) safety policy and objectives;

b) SMS requirements;

c) SMS processes and procedures; and

d) accountability, responsibilities and authorities for SMS processes and procedures.

1.5.2. The operator shall develop and maintain SMS operational records as part of its SMS documentation.

Note. – Depending on the size of the operator and the complexity of its aviation services, the SMS manual and SMS operational records may be in the form of stand-alone documents or may be integrated with other operational documents (or documentation) maintained by the operator.

2. Safety risk management

2.1. Hazard identification

2.1.1. The operator shall develop and maintain a process to identify hazards associated with its aviation services;

2.1.2. Hazard identification shall be based on a combination of reactive and proactive methods.

2.2. Safety risk assessment and mitigation

The operator shall develop and maintain a process that ensures analysis, assessment and control of the safety risks associated with identified hazards.

Note. – The process may include predictive methods of safety data analysis.

3. Safety assurance

3.1. Safety performance monitoring and measurement

3.1.1. The operator shall develop and maintain the means to verify the safety performance of the operator and to validate the effectiveness of safety risk controls;

Note. – An internal audit process is one means to monitor compliance with safety regulations, the foundation upon which SMS is built, and assess the effectiveness of these safety risk controls and the SMS.

3.1.2. The operator's safety performance shall be verified in reference to the safety performance indicators and safety performance targets of the SMS in support of the operator's safety objectives.

3.2. The management of change

The operator shall develop and maintain a process to identify changes which may affect the level of safety risk associated with its aviation services and to identify and manage the safety risks that may arise from those changes.

3.3. Continuous improvement of the SMS

The operator shall monitor and assess its SMS processes to maintain or continuously improve the overall effectiveness of the SMS.

4. Safety promotion

4.1. Training and education

4.1.1. The operator shall develop and maintain a safety training programme that ensures that personnel are trained and competent to perform their SMS duties;

4.1.2. The scope of the safety training programme shall be appropriate to each individual's involvement in the SMS.

4.2. Safety communication

The operator shall develop and maintain a formal means for safety communication that:

a) ensures personnel are aware of the SMS to a degree commensurate with their positions;

b) conveys safety-critical information;

c) explains why particular actions are taken to improve safety; and

d) explains why safety procedures are introduced or changed.

ATTACHMENT 10: ARTICLE 83 bis AGREEMENT SUMMARY

(Chapter 2.4, 2.4.18, refers)

Note.— Chapter 2.4, 2.4.18.1, requires a certified true copy of the agreement summary to be carried on board.

1. Purpose and scope

The Article 83 bis agreement summary will contain the information in the template at paragraph 2, in a standardized format.

2. Article 83 *bis* Agreement Summary

ARTICLE 83 *bis* AGREEMENT SUMMARY				
Title of the Agreement				
State of Registry:		Focal Point:		
State of the Operator		Focal Point:		
Date of Signature‡:	By state of Registry:			
	By state of the operator:			
Duration[1]:	Start date:	End date:		
Language of the Agreement:				
ICAO Registration No.:				
Umbrella Agreement (if any) with ICAO Registration number:				

Chicago Convention	**ICAO Annexes affected by the transfer to the State of the Operator of responsibility in respect of certain functions and duties**			
Article 12: Rules of the Air	Annex2, all chapters	Yes No	☐ ☐	
Article 30 a): Aircraft radio Equipment	Radio Station License	Yes No	☐ ☐	
Articles 30 b) and 32 a): Personnel Licensing	Annex 1, Chapters 1, 2, 3 and 6 and Annex 6 Part I, Radio Operator or Part III, section II, Composition of the flight crew (radio operator) and/or Part II, Qualifications and/or Flight crew member licensing or Part III, Section III, Qualifications	Yes No	☐ ☐	Annex 6: [Specify Part & paragraph][§]
Article 31: Certificates of Airworthiness	Annex 6 Part I or Part III, Section II	Yes No	☐ ☐	[Specify Part & chapters][2]
	Annex 6 Part II or Part III, Section III	Yes No	☐ ☐	[Specify Part & chapters][2]
	Annex 8 Part II, Chapters 3 and 4	Yes No	☐ ☐	[Specify Part & chapters][2]

Aircraft affected by the transfer of responsibilities to the State of the Operator					
Aircraft make, model, series	Nationality & Registration marks	Serial No	AOC #	Dates of Transfer of Responsibilities	
				From date[1]	To date[1]

‡ (dd/mm/yyyy)

§ Square Brackets inidicate information that needs to be provided

ATTACHMENT 11: AUTHORIZATIONS

An authorization entitles an operator, owner or pilot-in-command to undertake the authorized operations. Authorizations can take the form of specific approvals, approvals or acceptances.

1. SPECIFIC APPROVAL ACTIONS

1.1 The term "specific approval" indicates a formal action on the part of the State which results in an addition to the specific approval template.

1.2 The following provisions make explicit reference to the need for a specific approval:

a) Operational credits for HUD, EVS, SVS, CVS, automatic landing systems OPS2(A)-2.2.2.2.1.1;

b) Low Visibility Operations OPS2(A)-2.2.2.2.5, OPS2(A)-2.2.2.2.6;

c) Electronic Flight Bags OPS2(A)-2.4.17.2.2;

d) AR navigation specifications for PBN Operations OPS2(A)-2.5.2.5;

e) Reduced Vertical Separation Minima OPS2(A)-2.5.2.7 (b).

1.3 The specific approval template is provided in Attachment 1.

2. APPROVAL ACTIONS

The term "approval" indicates a more formal action on the part of the State with respect to a certification matter than does the term "acceptance". Some States require the Director of the Civil Aviation Authority (CAA) or a designated lower-level CAA official to issue a formal written instrument for every "approval" action taken. Other States allow a variety of documents to be issued as evidence of an approval. The approval document issued and the matter addressed by the approval will depend on the delegated authority of the official. In such States, authority to sign routine approvals is delegated to technical inspectors. More complex or significant approvals are normally issued by higher-level officials.

3. PROVISIONS THAT REQUIRE AN APPROVAL

The following provisions require or encourage approval by specified States. The approval of the State of Registry is required in all of the certification actions listed below that are not preceded by an asterisk. 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 Registry should take the necessary steps to ensure that operators for which it is responsible comply with any applicable approvals issued by the State of Design, in addition to its own requirements.

Note.— Items that require a specific approval are not included here. Refer to 1.2 for a list of these provisions.

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

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

c) Aircraft-specific minimum equipment list (MEL) (Section 3, OPS2(A)-3.6.1);

d) Performance-based navigation operations (other than RNP-AR) (OPS2(A)-2.5.2.3));

e) MNPS operations (OPS2(A)-2.5.2.6 (b));

f) Procedures for electronic navigation data management (Section 3, OPS2(A)-3.7.3); and

g) **Mandatory maintenance tasks and intervals (Section 3, OPS2(A)-3.11.2).