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Terminology, Abbreviations and Acronyms

ACAS	Airborne Collision Avoidance System
ADRS	Aircraft data recording system
AIP	Aeronautical Information Publication
AMC	Acceptable Means of Compliance. Guidance material on meeting the requirements of a standard
AN(HK)O	Air Navigation (Hong Kong) Order
ANS	Air Navigation System
APU	Auxiliary power unit
ATC	Air Traffic Control
ATPL	Airline Transport Pilot Licence
ATS	Air Traffic Services
CARS	Cockpit audio recording system
CAT I	Category I
CAT II and III	Category II and III Limits associated with a precision instrument approach system
CDI	Course Deviation Indicator
CE	Chief Executive
CEO	Chief Executive Officer
CFIT	Controlled flight into terrain
C of A	Certificate of Airworthiness
C of R	Certificate of Registration
CRM	Crew Resource Management
CVR	Cockpit voice recorder
CVS	Combined vision system
DA/H	Decision Altitude/Height
DME	Distance Measuring Equipment
EFB	Electronic flight bag
EGPWS	Enhanced Ground Proximity Warning System
ELT	Emergency Locator Transmitter
ELT(AD)	Automatic deployable ELT
ELT(AF)	Automatic fixed ELT
ELT(AP)	Automatic portable ELT
ELT(S)	Survival ELT
EVS	Enhanced vision system
ERS	Emergency Response Services
FAA	Federal Aviation Administration of the USA
FDR	Flight data recorder
FIR	Flight Information Region
FMS	Flight Management System
GBAS	Ground-based augmentation system
GLS	GBAS landing system
GNSS	Global Navigation Satellite System
GPS	Global Positioning System
GPWS	Ground Proximity Warning System

HAI	High Altitude Indoctrination
HKCAD	Civil Aviation Department, Hong Kong
hPa	Hectopascals of pressure
HUD	Head-up display
IBAC	International Business Aviation Council
ICAO	International Civil Aviation Organization
IFR	Instrument Flight Rule
IMC	Instrument meteorological conditions
ISO	International Standards Association
JAA	Joint Aviation Authority of the European Union
JAR OPS	Joint Aviation Regulations –Operations
JAR-FCL	Joint Aviation Regulation –Flight Crew Licensing
LED	Light emitting diode
MDA/H	Minimum Decision Altitude/Height
MEL	Minimum Equipment List
MMEL	Master minimum equipment list
MNPS	Minimum Navigation Performance Specification
NAT	North Atlantic
NBAA	National Business Aviation Association
NOTAM	Notice to Airmen
OCA/H	Obstacle clearance altitude/height
PBC	Performance-based communication
PBN	Performance-based navigation
PBS	Performance-based surveillance
PF	Pilot Flying
PIC	Pilot-in-Command
PNF	Pilot not flying
PC	Pilot Proficiency Check
QFE	Height above airport or runway, local station pressure
QNH	Altitude above Mean Sea Level, local station pressure
RAIM	Receiver Autonomous Integrity Monitoring
RCP	Required communication performance
RNAV	Area navigation
RNP	Required Navigation Performance
RSP	Required surveillance performance
RVR	Runway Visual Range
RVSM	Reduced Vertical Separation Minima
SAR	Search and Rescue
SIC	Second-in Command
SID	Standard Instrument Departure
SMS	Safety Management System
SOP	Standard Operating Procedure
SSR	Secondary Surveillance Radar
STAR	Standard Arrival Route
State	A Contracting State of the Convention on ICAO
SVS	Synthetic vision system
TAA	Technically advanced aircraft
TAWS	Terrain Awareness and Warning System
TCAS	Traffic Alert and Collision Avoidance System

TLS	Target level of safety
TR	Type rating
VFR	Visual Flight Rules
VLJ	Very Light Jet
WXR	Weather radar

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PART ONE - NON-PUBLIC TRANSPORT OPERATIONS (AEROPLANES)

CHAPTER 1 - GENERAL

1. PURPOSE

1.1 The Standards and Recommended Practices (SARPs) for the Operations of Aircraft – International General Aviation were prescribed by the International Civil Aviation Organisation (ICAO) under the ICAO Annex 6 Part II (for aeroplane) & Part III (for helicopter).

1.2 With the People's Republic of China (PRC) being a Contracting State to the ICAO, the Civil Aviation Department of Hong Kong, China (HKCAD) is obliged to adhere to the international safety standards promulgated by the ICAO.

1.3 In Hong Kong, the statutory requirements for regulating the safety of air navigation and operations of aircraft are prescribed in the Air Navigation (Hong Kong) Order 1995 (Chapter 448C) (hereinafter referred as the "AN(HK)O") which can be downloaded from *www.blis.gov.hk*. The AN(HK)O will be reviewed by the HKCAD periodically, including the control for international non-public transport operations, to ensure the legislation are kept up-to-date with the latest ICAO SARPs.

1.4 The contents within this document are made with reference to the SARPs under the above-mentioned ICAO Annexes. This document provides the appropriate guidance and information to owners, operators and flight crew of Hong Kong registered aircraft engaging in international non-public transport aircraft operations. The word "*should*" is used extensively in this Manual signifying the advisory nature of the guidelines provided. However, please note that Hong Kong operators may face delays, possible grounding or even legal actions by other civil aviation authorities if non-compliance to this Manual (and therefore to ICAO Annex 6 Part II & III) is found during ramp inspections.

2. APPLICABILITY

2.1 Unless stated otherwise, flight operations involving any passage over the territory of any country other than Hong Kong is considered as "external air navigation" in this manual.

2.2 The information provided by this Manual covers operation and piloting of aircraft, the arrangements for the planning and preparation for flight, and the maintenance and equipment of aircraft.

2.3 This document contains four parts, i.e. Part One, Part Two, Part Three and Part Four. The structure and format of this document are based on the ICAO Annex 6 Part II and Part III which uses a building–block approach. Information that applies to all non-public transport aeroplane activities involving external air navigation are contained in Part One. Additional guidance that applies to large aeroplanes, turbojet aeroplanes and corporate aviation operations are in Part Two. Part Three includes all relevant guidelines for non-public transport helicopter operations involving external air navigation. The provisions governing the continued airworthiness support arrangement of the applicable aircraft are detailed in Part Four.

2.4 This Manual is not applicable to those flights operated in accordance with the terms of the Air Operator's Certificate (AOC) by a holder of such certificate granted in accordance with Article 6 of the Air Navigation (Hong Kong) Order 1995 (AN(HK)O) and to those flights operated by the Government Flying Service, which is required to upkeep a general standard equivalent to those maintained by an AOC holder.

2.5 If there is any discrepancy between this Document and any legislation, the legislation should be the overriding document. Likewise, if there is any mismatch between this Document and other HKCAD document, the latter should prevail.

3. REQUIREMENTS AND PROCEDURES

3.1 Each operator and/or owner should take reasonable care to ensure that all persons employed, engaged, or contracted to perform safety-related activities, are familiar with the appropriate sections of legislation, any applicable conditions on the certificate, licence, permit or approval.

3.2 The pilot-in-command should 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 should 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.

3.3 The pilot-in-command should not conduct operations for which a specific approval is required unless such approval has been issued by the State of Registry or the HKCAD, when applicable.

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

4. POWER TO INSPECT

4.1 Each operator and/or owner should ensure that any person authorised by the HKCAD is allowed access to a place where operations are taking place.

4.2 Each operator and/or owner should ensure that any person authorised by the HKCAD should have access to any documentation relating to the safety of aircraft in flight. The operator should be responsible for ensuring that, if requested to do so by an authorised person, documentation is produced within a reasonable period of time.

5. DEFINITIONS

5.1 In this document, and with the exception as stated in paragraph 5.2 of this Chapter, where a term is used with is defined in a relevant ICAO Annex of ICAO publication, that definition will apply. Specifically: -

Aerodrome operating minima

The limits of usability of an aerodrome for:

(i) Take-off, expressed in term of runway visual range and/or visibility and, if necessary, cloud conditions;

(ii) 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

(iii) 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.

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).

Cabin crew member

An aircraft crew member, other than a flight crew member, who has been assigned duties to be performed in the interest of the passengers on anaircraft.

Combined vision system (CVS)

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

Continuous descent final approach (CDFA)

A technique, consistent with stabilized approach procedures, for flying the final approach segment of a non-precision instrument approach procedure as a continuous descent, without level-off, from an altitude/height at or above the final approach fix altitude/height to a point approximately 15 m (50 ft) above the landing runway threshold or the point where the flare manoeuvre should begin for the type of aircraft flown.

Dangerous goods

Articles or substances which are capable of posing significant risk to health, safety or property when transported by air. Dangerous goods are classified in Annex18, 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.

Electronic flight bag (EFB)

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

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).

Estimated time of use

One hour before and after the earliest and latest time of arrival.

Flight crew member

An aircraft crew member assigned to act as pilot or flight engineer of an aircraft during flight time.

Flight duty time

The period of time that starts when a flight crew member reports for a flight and finishes at the end of the flight when the aircraft engines are shut off.

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.

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:

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

(ii) 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.

Isolated aerodrome

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

Operator

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

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 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.

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.

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.

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 fromthe perspective of the flight deck.

5.2 The definition in paragraph 5.1 of this Chapter will not apply when :-

(a) the contrary is indicated; or

(b) there is a different definition in the Civil Aviation Ordinance (Cap. 448) or AN(HK)O.

5.3 Differences to ICAO definitions and SARPs are identified in the Aeronautical Information Publication (AIP).

CHAPTER 2 - FLIGHT OPERATIONS

1. OPERATING FACILITIES

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

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

2. OPERATIONS MANUAL

2.1 Each operator should provide an operations manual containing all the instructions and information necessary for operations personnel to perform their duties.

2.2 The operator should ensure that all staff members have ready access to the operations manual, or to those parts of the operations manual that relate to their duties.

2.3 The operator should ensure that the operations manual is kept up to date in a timely manner.

2.4 Amendments and revisions should be issued to all staff members required to use the Manual.

2.5 The operations manual should normally include at least the following elements:

(a) table of contents, amendment control and list of effective pages; and

(b) duties, responsibilities and succession of management and operating personnel; and

(c) details of operator safety management system, if applicable; and

(d) a description of operational control system; and

(e) MEL procedures, if applicable; and

(f) normal flight operations; and

(g) SOP's; and

(h) weather limitations; and

(i) flight & duty time limitations, if applicable; and

(j) emergency operations; and

(k) accident / incident considerations; and

(l) personnel qualifications & training; and

(m) record keeping; and

(n) a description of the maintenance control system; and

(o) for aircraft with a MTWA greater than 5,700kg, details of the security programme; and

(p) details of any extended operations over a hostile environment, if applicable; and

(q) procedures for steep approaches, if applicable.

2.6 The HKCAD may consider any documentation incorporating the above elements as equivalent to an operations manual.

3. OPERATIONAL MANAGEMENT

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

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

(b) is fully competent to taxi the aeroplane;

(c) is qualified to use the radio if radio communications are required; and

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

3.2 Aerodrome operating minima

3.2.1 The pilot-in-command should not operate to or from an aerodrome using operating minima lower than those which may be established for that aerodrome by the State in which it is located, except with the specific approval of that State.

3.2.2 The pilot-in-command should establish aerodrome operating minima in accordance with criteria specified in ICAO Document 9365 – Manual of All-Weather Operations, for each aerodrome to be used in operations. Such minima should 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: The State of the Aerodrome is not required to establish aerodrome operating minima

3.3 Passengers

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

(a) seat belts;

(b) emergency exits;

(c) life jackets;

(d) oxygen dispensing equipment; and

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

3.3.2 The pilot-in-command should 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.

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

3.3.4 The pilot-in-command should 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 should be secured in their seats by means of the seat belts or harnesses provided.

4. FLIGHT PREPARATION

4.1 A flight should 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;

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

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

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

(g) 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.

4.2 Before commencing a flight the pilot-in-command should 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, should 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.

4.3 Weather conditions

4.3.1 A flight to be conducted in accordance with the visual flight rules should not be commenced unless current meteorological reports or a combination of current reports and forecasts indicate that the meteorological conditions along the route or that part of the route to be flown under the visual flight rules will, at the appropriate time, be such as to render compliance with these rules possible.

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

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

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

4.4 Alternate aerodromes

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

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

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

(i) a standard instrument approach procedure is prescribed for the aerodrome of intended landing; and

(ii) available current meteorological information indicates that the following meteorological conditions will exist from two hours before time of arrival:

- a cloud base of at least 300 m (1,000 ft) above the minimum associated with the instrument approach procedure; and

- visibility of at least 5.5 km or of 4 km more than the minimum associated with the procedure.

4.5 Fuel and oil supply

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

(a) when the flight is conducted in accordance with the instrument flight rules and a destination alternate aerodrome is not required, flight to the aerodrome of intended landing, and after that, 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 from the aerodrome of intended landing to an alternate aerodrome, and after that, for at least 45 minutes at normal cruising altitude; or

(c) when the flight is conducted in accordance with the visual flight rules by day, flight to the aerodrome of intended landing, and after that, for at least 30 minutes at normal cruising altitude; or

(d) when the flight is conducted in accordance with the visual flight rules by night, flight to the aerodrome of intended landing and thereafter for at least 45 minutes at normal cruising altitude.

Note- Nothing in paragraph 4.5 of this Chapter precludes amendment of a flight plan in flight in order to replan the flight to another aerodrome, provided that the requirements of 4.5 of this Chapter can be complied with from the point where the flight is replanned.

4.6 Refuelling with passengers on board

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

4.7 The pilot-in-command should 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.

5. IN-FLIGHT PROCEDURES

5.1 Aerodrome operating minima

5.1.1 A flight should not be continued towards the aerodrome of intended landing, unless the latest available information indicates that at the expected time of arrival, a landing can be effected at that aerodrome or at least one destination alternate aerodrome, in compliance with the operating minima established in accordance with paragraph 3.2 of this Chapter.

5.2 An instrument approach should not be continued 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.

5.3 The pilot-in-command should also be satisfied that, with the runway surface condition information available, the aeroplane performance information indicates that a safe landing can be made.

Note – Guidance procedures for using runway surface condition information on board aircraft are contained in the ICAO PANS-Aerodromes (Doc 9981) and in the performance section of the aeroplane flight manual.

5.4 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 approach may be continued to DA/H or MDA/H. In any case, an aeroplane should 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 State criteria.

5.5 When meteorological conditions likely to affect the safety of other aircraft are encountered, they should be reported as soon as possible.

5.6 The pilot-in-command should report runway braking action when the runway braking action encountered is not as good as reported.

Note - Guidance procedures for making special air-reports regarding runway braking action are contained in the Procedures for Air Navigation Services — Air Traffic Management (PANS-ATM, Doc 4444), Chapter 4, and Appendix 1 – Instructions for air-reporting by voice communication.

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

5.8 Flight crew members at duty stations

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

5.8.2 When enroute all flight crew members required to be on flight deck duty should remain at their stations except when their absence is necessary for the performance of duties in connection with the operation of the aeroplane or for physiological needs.

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

5.8.4 When safety harnesses are provided, any flight crew member occupying a pilot's seat should keep the safety harness fastened during the take-off and landing phases; all other flight crew members should keep their safety 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.

5.9 In-flight fuel management

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

5.9.2 The pilot-in-command should monitor the amount of usable fuel remaining on board to ensure it 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.

5.9.3 The pilot-in-command should 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, 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.

5.9.4 The pilot-in-command should 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 Part One, chapter 2 paragraph 4.5.1 and is the minimum amount of fuel required upon landing at any aerodrome.

Note 2: The words "MAYDAY FUEL" describe the nature of the distress conditions as required in Annex 10, Volume II.

5.10 Instrument approach procedures

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

5.10.2 Aeroplanes operated in accordance with the instrument flight rules should comply with the instrument approach procedures approved by the State in which the aerodrome is located.

6. DUTIES OF PILOT-IN-COMMAND

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

6.2 The pilot-in-command should 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

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

6.3 The pilot-in-command should 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.

CHAPTER 3 - OPERATING REQUIREMENTS

1. AIRCRAFT FLIGHT MANUAL

1.1 No pilot-in-command should operate an aircraft unless it is operated in compliance with the operating limitations specified in the aircraft flight manual, or an equivalent document approved by the HKCAD.

1.2 The owner or lessee (where applicable) of an aircraft should ensure that the aircraft flight manual is updated and amended to implement any change mandated by the HKCAD.

2. JOURNEY LOG BOOK OR EQUIVALENT RECORD

2.1 Each owner or lessee of an aircraft should keep accurate journey log book or equivalent records that contain for each flight or series of flights:

(a) aircraft nationality and registration; and

(b) date; and

(c) names of crew members; and

(d) duty assignments of crew members; and

(e) place of departure; and

(f) place of arrival; and

(g) time of departure; and

(h) time of arrival; and

(i) hours of flight; and

(j) nature of flight (private, aerial work, scheduled or non-scheduled)

(k) incidents and observations (if any); and

(l) signature of person in charge.

2.2 Each owner or lessee of an aircraft should retain each daily flight record for a period of 6 months after the date of the record.

3. DOCUMENTS TO BE CARRIED

3.1 Each pilot-in-command should ensure that the following documents are carried on each flight:

(a) The valid certificate of airworthiness; and

(b) such documentation as will enable the pilot-in-command to record the information required. This may include items such as the operational flight plan, aeroplane technical log etc; and

(c) the aircraft radio station licence; and

(d) the flight manual for the aircraft, or equivalent document; and

(e) the operations manual, or those parts of it that apply to flight operations; and

(f) the flight crew licences of each member of the flight crew; and

(g) current maps and charts of the route to be operated and any other routes which the aircraft may operate in the event of the aircraft diverting; and

(h) essential data relating to the search and rescue facilities in the areas in which the flight will be operated including the ground-air signal codes; and

(i) a copy of any permissions, authorisations or exemptions relevant to the flight; and

(j) any specific approval issued by the State of Registry or the HKCAD, if applicable, for the operation(s) to be conducted; and

(k) the certificate of registration for the aircraft; and

(l) the journey log book or equivalent record; and

(m) a noise certification document, if applicable; and

(n) a copy of the notified procedures to be followed by the pilot-in-command of an intercepted aircraft, and the notified visual signals for use by intercepting and intercepted aircraft.

3.2 Before any flight is commenced the pilot-in-command should ensure that the documents listed in paragraph 3.1 of this Chapter are in force and will remain so for the duration of the flight.

4. CORRECTING LENSES

4.1 Any flight crew member assessed as fit to exercise the privileges of a licence subject to the use of suitable correcting lenses, should have a spare set of the correcting lenses readily available when exercising those privileges.

5. WEIGHT AND BALANCE

5.1 A flight should not be commenced unless the pilot-in-command is satisfied that the flight can be safely made in the expected flight conditions, taking account of:

(a) gross weight of the aircraft; and

(b) location of centre of gravity.

5.2 The pilot-in-command should ensure that any load carried is properly distributed and safely secured.

6. AIRCRAFT PERFORMANCE

6.1 A flight should not be commenced unless the pilot-in-command is satisfied that the flight can be safely made in the expected conditions, taking account of at least the following:

(a) approved operating limitations contained in the Aircraft Flight Manual; and

(b) environmental conditions, including but not limited to:

- outside air temperature; and
- pressure altitude; and
- wind component; and

(c) aircraft configuration; and

(d) aircraft gross weight, including landing weight at the planned destination and any planned alternate; and

(e) use of aircraft operating systems; and

(f) aircraft operating techniques; and

(g) runway slope, surface and condition; and

(h) water surface condition, current and water density where relevant; and

(i) any other factors which may significantly affect the performance of the aircraft.

7. COMPOSITION OF CREW

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

7.2 The pilot-in-command should:

(a) ensure that each flight crew member holds a valid licence issued by the State of Registry, or if issued by another Contracting State, rendered valid by the State of Registry; and

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

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

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

8. RADIO LICENCES

8.1 Each pilot-in-command should ensure that where an aircraft is fitted with radio transmitting equipment, that radio transmitting equipment should only be operated by crewmembers who are appropriately qualified.

9. PORTABLE ELECTRONIC DEVICES

9.1 A pilot-in-command should not operate, or allow the operation, of any mobile phone or other portable electronic device that is designed to transmit electromagnetic energy, on any aircraft unless it has been determined that the portable electronic device to be used will not cause interference with any aircraft system or equipment of the aircraft on which it is used.

9.2 The prohibition in paragraph 9.1 should not apply to:

(a) hearing aids; and

(b) heart pacemakers; and

(c) portable voice recorders; and

(d) electric shavers; and

(e) electronic watches.

10. FLIGHT INSTRUCTION AND TESTING

10.1 No pilot-in-command should give flight instruction in an aircraft, unless that aircraft is equipped with fully functioning dual control. The requirements as stated in Article 23 if the AN(HK)O should also be complied with.

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CHAPTER 4 - GENERAL FLIGHT REQUIREMENTS

1. NOTIFICATION OF INCIDENTS AND ACCIDENTS

1.1 Each pilot-in-command should notify the HKCAD of any incident or accident in accordance with CAD 382 (The Mandatory Occurrence Reporting Scheme).

2. CREW MEMBER AT STATIONS

2.1 The pilot-in-command should ensure that each crew member on duty in an aircraft during take-off and landing or when he so directs, should:

(a) be at their crew member station unless their absence is necessary to perform duties in connection with the operation of the aircraft; and

(b) have their safety belt, or harness where so equipped, fastened while at the crew member station.

2.2 The pilot-in-command should ensure that all flight crew members required to be on flight deck duty in an aircraft other than during take-off and landing should remain at their stations with their safety belt fastened except when their absence is necessary for the performance of duties in connection with the operation of the aircraft or for physiological needs.

3. OCCUPATION OF SEATS AND WEARING OF RESTRAINTS

3.1 Each pilot-in-command of an aircraft should require each person on the aircraft to occupy a seat or berth and to fasten his safety belt, or restraining belt, or if equipped, shoulder harness or single diagonal shoulder belt:

(a) during each take-off and landing; and

(b) at other times when the pilot-in-command considers it necessary for his safety.

3.2 Each pilot-in-command of an aircraft should require each passenger to place his seat in the take-off and landing configuration during take-off and landing.

3.3 Paragraph 3.1(a) and (b) of this Chapter should not apply to a child of less than 2 years of age if the child:

(a) is held by an adult who is occupying a seat or berth, provided the child is secured by a safety belt attached to the adult's safety belt; or

(b) occupies a seat equipped with an approved child restraint system, if the child does not exceed the specified weight limit for that system and is accompanied by a parent, guardian, or attendant designated by the child's parent or guardian to attend to the safety of the child during the flight.

4. USE OF OXYGEN

4.1 The statutory requirements regarding the carriage of oxygen and oxygen equipment are laid down in Schedule 5 to the AN(HK)O. The requirements are complex, and therefore clear information and instructions must be included in the operations manual to enable the pilot-in-command to verify that the minimum acceptable oxygen quantity or pressures and associated equipment is carried. Guidance must also be given on the use of the equipment.

4.2 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 prescribed in paragraph 4.7 of Chapter 2.

4.3 Cabin crew should be safeguarded so as to ensure reasonable probability of their retaining consciousness during any emergency descent which may be necessary in the event of loss of pressurisation and, in addition, they should have such means of protection as will enable them to administer first aid to passengers during stabilized flight following the emergency. Passengers should be safeguarded by such devices or operational procedures as will ensure reasonable probability of their surviving the effects of hypoxia in the event of loss of pressurisation.

5. CARRIAGE OF BAGGAGE AND CARGO

5.1 A pilot-in-command should not permit baggage or cargo to be carried in an aircraft unless it is:

(a) stowed and restrained in accordance with any instructions given in the aircraft flight manual; and

(b) packaged to avoid injury to any person on board.

5.2 A pilot-in-command should not permit any baggage or cargo carried to:

(a) exceed the load limitation for the seats, berths, or floor structure as prescribed by the aircraft flight manual, or by placards; or

(b) be located in a position that restricts the access to or use of any required emergency exit; or

(c) be located in a position where it may restrict access to any flight control or part of the aircraft cockpit, or may restrict visibility of any flight instrument.

6. CARRIAGE OF DANGEROUS GOODS

6.1 The pilot-in-command should ensure that any dangerous goods should not be carried in an aircraft unless the conditions of carriage of such dangerous goods meet the requirements of Schedule 16 of AN(HK)O.

7. CARRIAGE OF WEAPONS AND MUNITIONS OF WARS

7.1 Munitions of war may only be carried with the written permission of the HKCAD. Munitions of war are any weapon, ammunition or article containing an explosive or noxious liquid, gas or other thing that is designed or made for use in warfare against the person. They include parts, whether components or accessories, for any such weapon, ammunition or article.

7.2 Sporting weapons, not being weapons originally designed as munitions of war, may be carried with the approval of the operator and without a Permission, provided they are unloaded, are carried as passenger baggage or as cargo, and are stowed in a part of the aircraft that is inaccessible to passengers. The passenger or shipper must furnish details about such weapons to the operator before the flight. Ammunition for sporting weapons may also be carried subject to such dangerous goods limitations as are applicable.

8. FAMILIARITY WITH OPERATING LIMITATIONS AND EMERGENCY EQUIPMENT

8.1 Each crew member of an aircraft should before beginning a flight, be familiar with:

(a) the aircraft flight manual and operations manual for that aircraft; and

(b) any placards, listings, or instrument markings containing any operating limitation prescribed for that aircraft by the manufacturer; and

(c) the emergency equipment installed on the aircraft; and

(d) which crew member is assigned to operate each item of emergency equipment; and

(e) the procedures to be followed for the use of normal and emergency equipment in an emergency situation.

9. OPERATING IN ICING CONDITIONS

9.1 A pilot-in-command:

(a) should not operate an aircraft in conditions where ground icing is known or suspected to be present, unless the aircraft has been inspected for icing and if necessary given such de-ice and anti-ice treatment as may be required; and

(b) should at no time perform a take-off in an aircraft that has snow, ice, or frost adhering to the wings, rotors, stabilisers, or control surfaces; and

(c) should not perform a take-off in an aircraft that has snow, ice, or frost adhering to any propeller, windscreen, or powerplant installation, or to an airspeed, altimeter, rate of climb, or flight attitude instrument system, unless in accordance with paragraph 9.1(e) of this Chapter; and

(d) should not fly an aircraft into known or forecast icing conditions unless the aircraft is certificated and equipped for flight in the type of known icing conditions; and

(e) may only perform a take-off in an aircraft that has frost adhering to a propeller, windscreen, or powerplant installation if such action is specifically permitted by the aircraft flight manual and the take-off is performed in accordance with the aircraft flight manual procedures.

10. RESTRICTED AND DANGEROUS AREA

10.1 No pilot-in-command should operate an aircraft within a restricted area unless that person is acting in accordance with notified procedures for the restricted area.

10.2 No pilot-in-command should operate an aircraft within a danger area unless that person is acting in accordance with notified procedures for that danger area.

11. RIGHT OF WAY

11.1 Each pilot-in-command of an aircraft:

(a) should, when weather conditions permit, regardless of whether the flight is performed under IFR or under VFR, maintain a visual lookout so as to see and avoid other aircraft; and

(b) that has the right of way, should take such action in accordance with the Rules of the Air, including collision-avoidance manoeuvres based on resolution advisories provided by ACAS equipment, that will best avert collision but otherwise maintain heading and speed; and

(c) that is obliged to give way to another aircraft, should avoid passing over, under, or in front of the other aircraft, unless passing well clear of the aircraft, taking into account the effect of wake turbulence.

12. RADIO COMMUNICATIONS

12.1 Each pilot-in-command of an aircraft when required to communicate by radio with any air traffic service should:

(a) do so using the phraseology and procedures in ICAO Annex 10 Vol 2 Aeronautical Telecommunications – Communications Procedures, ICAO Doc 4444 Procedures for Air Navigation Services – Air Traffic Management and those based on the examples contained in ICAO Doc 9432 Manual of Radiotelephony; and

(b) unless otherwise authorised by ATC, read back any of the following issued by ATC:

(i) any clearance or instruction issued by ATC for IFR flight; and

(ii) any clearance to enter, land on, take-off on, cross or back-track on a runway; and

(iii) any altimeter pressure settings; and

(c) acknowledge any other clearance or instruction issued by ATC.

13. COMPLIANCE WITH ATC CLEARANCES AND INSTRUCTIONS

13.1 Each pilot-in-command of an aircraft should:

(a) comply with any ATC clearance or instruction; and

(b) when a deviation from an ATC clearance or instruction is required for the safe operation of the aircraft, notify ATC of that deviation as soon as possible; and

(c) be responsible for the safety of that aircraft regardless of any ATC instructions that may be given.

14. OPERATIONS IN REQUIRED NAVIGATION PERFORMANCE DESIGNATED AIRSPACE

14.1 No pilot-in-command should operate an aircraft in RNP designated airspace unless:

(a) there is available in the aircraft an operations manual detailing the RNP procedures, incorporating all amendments, approved for that aircraft and aircraft navigation system; and

(b) the operations in RNP designated airspace are performed in accordance with the procedures, instructions, and limitations in the approved manual; and

(c) each flight crew member has adequate knowledge of, and familiarity with:

(i) the aircraft; and

(ii) the aircraft navigation system; and

(iii) the procedures to be used, including the applicable contingency procedures; and

(d) the pilot-in-command has ensured that the aircraft and aircraft navigation system are both approved for RNP operations; that an Operational Approval issued by the HKCAD for the corresponding RNP specification is obtained; and that the RNP can be met for the planned route and any alternate routes; and

(e) a flight plan is submitted to the appropriate ATS unit that includes in the appropriate field of the ICAO standard flight plan:

(i) the letter 'R' when indicating an aircraft approved for RNP operations; and

(ii) the letter 'G' when indicating an aircraft equipped with an approved GNSS capability.

14.2 Each pilot-in-command should comply with all notified procedures relating to the designated RNP airspace.

15. USE OF SSR TRANSPONDER AND ALTITUDE REPORTING EQUIPMENT

15.1 Where an aircraft carries a serviceable transponder the pilot-in-command should ensure that the transponder is operated at all stages of flight, regardless of whether the aircraft is within or outside airspace where SSR is used for ATC purposes.

15.2 Where an aircraft carries serviceable Mode C transponder equipment, the pilot-in-command should operate the transponder continuously in this mode, unless instructed by ATC.

15.3 Whenever Mode C is operated and when pilots are required to transmit level information, such level information should be given by stating the level to the nearest full 100 ft as indicated on the pilot's altimeter.

15.4 Wherever Mode S is operated the aircraft identification should be set on the transponder.

15.5 No pilot-in-command should operate an aircraft with Mode S transponder equipment installed unless that aircraft has been assigned a unique Mode S address code.

15.6 Each pilot-in-command of an aircraft operating in transponder-mandatory airspace should immediately advise the ATC unit having jurisdiction over the relevant airspace of any failure or partial failure of the transponder equipment.

16. REQUIREMENTS FOR VFR

16.1 A pilot-in-command should not operate an aircraft under VFR:

(a) when the flight visibility is less than that prescribed for the corresponding class of airspace; or

(b) at a distance from clouds that is less than that prescribed for the corresponding class of airspace; or

(c) when meteorological reports and forecasts indicate that it will not be possible, at the appropriate time, to operate the aircraft in accordance with the visual flight rules.

17. POSITION REPORTS

17.1 Each pilot-in-command of an aircraft on a VFR flight should, when operating in controlled airspace, report the position of the aircraft to ATC at the times or reporting points required by ATC.

18. FLIGHT PLANS

18.1 Each pilot-in-command of an aircraft should submit a flight plan to an appropriate ATS unit prior to the start of each flight under VFR that proceeds over water more than 10 nm from shore, or is operating over any other remote or hazardous terrain.

18.2 Each pilot-in-command of an aircraft that will be operating under IFR should:

(a) submit a flight plan to an appropriate ATS unit prior to each flight under IFR; and

(b) unless otherwise authorized by ATS, submit that flight plan at least 30 minutes prior to the beginning of the flight; and

(c) unless otherwise authorized by ATS, include the following information in the flight plan, in addition to that required by paragraph 18.2(b) of this Chapter:

(i) the wake turbulence category of the aircraft to be used; and

(ii) include in the navigation and approach aid equipment any applicable GPS and RNP approved equipment; and

(iii) the cruising speed and altitude; and

(iv) any other information the pilot-in-command believes necessary for ATS purposes; and

(d) advise an ATS unit, as soon as possible, of any delay exceeding 30 minutes in beginning the flight or departing from any aerodrome of intended landing.

19. USE OF GPS FOR NAVIGATION

19.1 No pilot-in-command of an aircraft operating under IFR should use GPS equipment as a sole means of air navigation unless operating in accordance with procedures approved by the HKCAD.

20. CONTINUED FLIGHT WITH REDUCED METEOROLOGICAL MINIMA

20.1 A pilot-in-command should ensure that a flight is not continued towards an aerodrome of intended landing unless the latest available meteorological information indicates that conditions at that aerodrome, or at least one destination alternate aerodrome, will, at the estimated time of arrival, be at or above the specified aerodrome operating minima.

21. IFR RADIO COMMUNICATIONS

21.1 Each pilot-in-command of an aircraft operating under IFR should, unless otherwise authorised by ATC:

(a) maintain a continuous listening watch on the appropriate frequency; and

(b) report as soon as possible to an appropriate ATS unit:

(i) the time and altitude of passing each designated reporting point, or the reporting points or the times specified by ATC; and

(ii) any other information relating to the safety of the flight.

21.2 Each pilot-in-command of an aircraft under radar control while operating under IFR should report passing only those reporting points specifically requested by ATC.

21.3 Each pilot-in-command of an aircraft operating under IFR within controlled airspace should, unless otherwise authorised by ATC, report as soon as possible to the appropriate ATC unit:

(a) on departure after take-off; and

(b) on reaching and leaving levels assigned by ATC; and

(c) when entering a holding pattern; and

(d) during an instrument approach procedure, when:

(i) overhead the navigation aid prior to commencing a reversal turn; and

(ii) commencing initial approach overhead the navigation aid or fix, or established on the DME arc; and

(iii) commencing the turn of a reversal procedure to intercept final approach; and

(iv) commencing final approach; or

(v) established on final approach after radar vectoring.

22. AEROPLANCE COMMUNICATION, NAVIGATION AND SURVEILLANCE EQUIPMENT

22.1 Communication equipment

22.1.1 Refer to AN(HK)O or HKCAD Airworthiness Notices for the requirements of aeroplane communication equipment.

22.1.2 For operations where communication equipment is required to meet an required communication performance (RCP) specification for performance-based communication (PBC), an aeroplane should, in addition to the requirements specified in paragraph 22.1.1:

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

(b) have information relevant to the aeroplane RCP specification capabilities listed in the flight manual or other aeroplane documentation, approved by the State of Design or the HKCAD; 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.

22.1.3 For operations where communication is required to meet an RCP specification for PBC, the following should be established and documented by the operator/owner:

(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.

Note: Information on the performance-based communication and surveillance (PBCS) concept and guidance material on its implementation are contained in the Performance-based Communication and Surveillance (PBCS) Manual (Doc9869), which is expected to be published by ICAO in November 2016.

22.1.4 In respect of those aeroplanes mentioned in paragraph 22.1.2, the operator/owner should ensure adequate provisions exist for:

(a) submitting the reports to the HKCAD regarding observed communication performance issued by monitoring programmes established in accordance with ICAO Annex 11, Chapter 3; and

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

22.2 Navigation equipment

22.2.1 Refer to AN(HK)O or HKCAD Airworthiness Notices for the requirements of aeroplane navigation equipment.

22.2.2 For operations where a navigation specification for performance-based navigation (PBN) has been prescribed, an aeroplane should, in addition to the requirements specified in paragraph 14 and 22.2.1 of this chapter:

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

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

Note: Further guidance on aeroplane documentation is contained in the ICAO Performance-based Navigation (PBN) Manual (Doc 9613).

22.2.3 For operations where a navigation specification for PBN has been prescribed, the following should be established and documented by the operator/owner:

(a) normal and abnormal procedures including contingency procedures;

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

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

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

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

Note 2: Guidance on specific approvals for PBN authorisation required (AR) navigation specifications is also contained in the ICAO Performance-based Navigation (PBN) Operational Approval Manual (Doc 9997).

Note 3: Electronic navigation data management is an integral part of normal and abnormal procedures.

22.3 Surveillance equipment

22.3.1 Refer to AN(HK)O or HKCAD Airworthiness Notices for the requirements of aeroplane surveillance equipment, and in accordance with the requirements of air traffic services.

22.3.2 For operations where surveillance equipment is required to meet a required surveillance performance (RSP) specification for performance-based surveillance (PBS), an aeroplane should, in addition to the requirements specified in paragraph 22.3.1:

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

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

23.3.3 For operations where surveillance is required to meet an RSP specification for the prescribed PBS, the following should be established and documented by the operator/owner:

(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.

Note: Further information on the performance-based communication and surveillance (PBCS) concept and guidance material on its implementation are contained in the Performance-based Communication and Surveillance (PBCS) Manual (Doc 9869), which is expected to be published by ICAO in November 2016.

22.3.4 In respect of those aeroplanes mentioned in paragraph 22.3.2, the operator/owner should ensure adequate provisions exist for:

(a) submitting the reports to the HKCAD regarding observed surveillance performance issued by monitoring programmes established in accordance with ICAO Annex 11, Chapter 3; and

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

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CHAPTER 5 - AEROPLANE PERFORMANCE OPERATING LIMITATIONS

1. GENERAL

1.1 An aeroplane should be operated:

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

(b) within the operating limitations prescribed by the HKCAD; and

(c) if applicable, within the mass limitations imposed by compliance with the applicable noise certification Standards in Annex 16, Volume I, unless otherwise authorized in exceptional circumstances for a certain aerodrome or a runway where there is no noise disturbance problem, by the HKCAD.

1.2 Placards, listings, instrument markings, or combinations thereof, containing those operating limitations prescribed by the HKCAD for visual presentation, should be displayed in the aeroplane.

1.3 The pilot-in-command should determine that aeroplane performance will permit the take-off and departure to be carried out safely.

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CHAPTER 6 - SECURITY

1. SECURITY OF AIRCRAFT

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

2. REPORTING OF UNLAWFUL INTERFERENCE

2.1 Following an act of unlawful interference, the pilot-in-command should submit a report of such an act to the designated local authority.

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.

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CHAPTER 7 - FLYING DISPLAYS AND PARACHUTE OPERATIONS

1. FLYING DISPLAYS

1.1 A pilot-in-command should not participate in a flying display unless:

(a) he holds a current display authorisation, granted by HKCAD; and

(b) he has taken all reasonable steps to confirm that the organizer of the flying display has been granted any permission as may be required, and that the planned flight can be safely made in accordance with the terms of such permission; and

(c) he operates at a height not less than that specified in either the pilot's display authorisation or any permission associated with the flying display, whichever is the greater; and

(d) he flies the aircraft aligned with reference to a display line sufficiently distanced from spectators so as not to cause undue risk to persons or property on the surface; and

(e) he does not carry any additional persons other than those crewmembers required to operate the aircraft; and

(f) he does not fly over any spectator area; and

(g) he does not conduct any high-energy manoeuvre between the display line and any spectator area; and

(h) he does not initiate any manoeuvre in the direction of any spectator area.

2. PARACHUTE OPERATIONS

2.1 A pilot-in-command should not allow parachute drop operations from an aircraft; unless the parachute drop operation is in accordance with the written permission from the HKCAD as per Article 41 of the AN(HK)O.

2.2 Each pilot-in-command performing a parachute drop operation should ensure that:

(a) the aircraft performing the operation has a current certificate of airworthiness which provides for parachute dropping; and

(b) the configuration of the aircraft is appropriate for the parachute-drop operation; and

(c) the aircraft has adequate interior room and satisfactory egress for the parachutists to be carried; and

(d) parachute static lines should only be attached to strong points approved for that purpose; and

(e) the aircraft flight manual authorizes flight with a door removed, or open, in flight; and

(f) any additional person carried in the aircraft, and necessary to the parachute operations:

(i) occupies a seat and fastens their safety belt during take-off and landing; and

(ii) wears an emergency or reserve parachute assembly; and

(iii) is trained in the use of the emergency or reserve parachute assembly; and

(iv) is briefed on the general procedures to be followed in an aircraft emergency including the method to be used for exiting the aircraft; and

(g) each person carried in the aircraft for the purpose of parachute operations:

(i) is not in a position in the aircraft that could hazard the safety of the aircraft or its occupants through inadvertent interference with the controls; and

(ii) is briefed on the general procedures to be followed in an aircraft emergency including the method to be used for exiting the aircraft; and

(iii) is secure during take-off and at any other time as directed by the pilot in command to a standard equivalent to that of persons occupying a seat or berth.

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CHAPTER 8 – AEROPLANES EQUIPPED WITH AUTOMATIC LANDING SYSTEMS, HUD OR EQUIVALENT DISPLAYS, EVS, SVS OR CVS

1. OPERATIONAL CRITERIA

1.1 In establishing operational criteria for the use of automatic landing systems, a HUD or equivalent displays, EVS, SVS or CVS, operator/owner should demonstrate to the HKCAD that:

(a) the equipment meets the appropriate airworthiness certification requirements;

(b) the operator/owner has carried out a safety risk assessment associated with the operations supported by the automatic landing systems, a HUD or equivalent displays, EVS, SVS or CVS;

(c) the operator/owner has established and documented the procedures for the use of, and training requirements for automatic landing systems, a HUD or equivalent displays, EVS, SVS or CVS.

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

Note 2: Guidance on establishing operational criteria is contained in Attachment 2.B of ICAO Annex 6, Part II.

2. OPERATIONAL CREDIT(S)

2.1 Where aircraft are equipped with automatic landing systems, a HUD and/or equivalent displays, EVS, SVS or CVS, or any combination of those systems into a hybrid system, the use of such systems for the "safe operation of an aircraft" (e.g. operational credit), approval should be obtained from the HKCAD.

2.2 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.

2.3 When operational credits have been granted by the HKCAD as per paragraph 2.1, the use of that system becomes essential for the safety of such operations and is subject to a specific approval which should be carried on board the particular aircraft.

2.4 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.

Note: Guidance on operational credit(s) for aircraft equipped with automatic landing systems, a HUD or equivalent displays, EVS, SVS and CVS is contained in Attachment 2.B of ICAO Annex 6, Part II and in the Manual of All-Weather Operations (Doc 9365).

CHAPTER 9 – ELECTRONIC FLIGHT BAGS (EFBs)

1. EFB EQUIPMENT

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

2. EFB FUNCTIONS

2.1 Where EFBs are used on board an aeroplane the pilot-in-command and/or the owner/operator should:

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

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

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

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

3. EFB OPERATIONAL CRITERIA

3.1 For Hong Kong registered aircraft, the operational criteria for the use of EFBs are as follows:

(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 theoperations 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/owner 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: Guidance on safety risk assessments is contained in the Safety Management Manual (SMM) (Doc 9859).

3.2 Detailed criteria for the operational use of EFB functions for the safe operation of aeroplanes are described in guidance document, CAD 562 (Electronic Flight Bag).

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PART TWO - LARGE AEROPLANES, TURBOJET AEROPLANES AND CORPORATE AVIATION OPERATIONS

CHAPTER 1 - GENERAL

1. PURPOSE

1.1 The requirements of this Part cover corporate aviation operations and the non-public transport operation of turbine powered aircraft or large piston-engined aircraft as defined in paragraph 2 of this Chapter.

1.2 This Part must be read in conjunction with Part One of this Document, which provides the general operating instructions.

2. APPLICABILITY

2.1 This Part applies to operators carrying out, or intending to carry out, non-public transport external air navigation using Hong Kong-registered aircraft as described in paragraph 2.2 of this Chapter except for those flights operated in accordance with the terms of the AOC by a holder of such certificate granted in accordance with Article 6 of the AN(HK)O 1995; or for flights operated by the Government Flying Service, which is required to upkeep a general standard equivalent to those maintained by an AOC holder.

2.2 For the purposes of paragraph 2.1 of this Chapter the following aircraft or aircraft operations are specified:

(a) aeroplane with a maximum certificated take-off weight exceeding 5,700 kg; or

(b) aeroplane equipped with one or more turbojet or turbofan engines; or

(c) aeroplane certified to carry more than 9 passengers; or

(d) the use of 3 or more aircraft that are operated by pilots employed by the operator for the purpose of flying the aircraft of which at least one aeroplane is involved; or

(e) any aircraft as the Chief Executive thinks fit.

3. COMPLIANCE WITH LAWS, REGULATIONS AND PROCEDURES

3.1 An operator should ensure that all employees know that they must comply with the laws, regulations and procedures of those States in which operations are conducted. Information for pilots on flight procedure parameters and operational procedures is contained in ICAO Doc 8168 Procedures for Air Navigation Service Aircraft Operations (PANS-OPS), Volume I. Criteria for the construction of visual and instrument flight procedures are contained in PANS-OPS, Volume II. Obstacle clearance criteria and procedures used in certain States may differ from PANS-OPS, and knowledge of these differences is important for safety reasons.

3.2 An operator should 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 should 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.

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

3.4 An operator should 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. This information may be made available to the pilot by means of the operations manual or such other means as is considered appropriate.

3.5 An operator should 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.

3.6 If there is any discrepancy between this Document and any legislation, the legislation should be the overriding document. Likewise, if there is any mismatch between this Document and other HKCAD document, the latter should prevail.

4. SAFETY MANAGEMENT SYSTEM

4.1 An operator should establish and maintain a safety management system that is appropriate to the size and complexity of the operation.

4.2 The safety management system should as minimum include:

(a) a process to identify actual and potential safety hazards and assess the associated risks;

(b) a process to develop and implement remedial action necessary to maintain an acceptable level of safety; and

(c) provision for continuous monitoring and regular assessment of the appropriateness and effectiveness of safety management activities.

Note 1: Guidance on safety management systems is contained in the SafetyManagement Manual (SMM) (Doc 9859) and CAD712 (Safety Management System for Air Operators, International Non-Public transport Operators, Maintenance Organisations and Flying Training Organisations).

Note 2: Guidance provisions on the protection of safety data, safety information and related sources are contained in CAD 739 (Flight Data Monitoring – A Guide to Implementation) and Appendix 3 to ICAO Annex 19.

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CHAPTER 2 - OPERATING REQUIREMENTS

1. ORGANISATIONAL STRUCTURE

1.1 An operator should establish an organisation capable of managing the safe operation of its aircraft.

1.2 The operator should clearly define the duties and accountabilities of those staff responsible for managing the safe operation of aircraft.

2. OPERATIONAL CONTROL

2.1 Each operator should ensure that the system for operational control of the aircraft is clearly defined, including the duties and accountabilities of all personnel involved.

2.2 Where contracted and sub-contract staff are used by the operator to carry out functions that relate to the safety of aircraft, the operator should ensure that the relevant duties and accountabilities of those staff are clearly defined by the operator. The operator should also ensure that the responsibilities of any contracting organisation and their staff are clearly defined and confirmed within the contract or agreement.

2.3 The operational control system used by the operator should recognize the legal responsibility of the pilot-in-command for the operational control of the aircraft.

3. STANDARD OPERATING PROCEDURES

3.1 An operator should provide standard operating procedures for the use of aircraft crew and operations staff for every aircraft type operated.

3.2 The standard operating procedures should contain the normal, abnormal and emergency procedures relating to the operation of aircraft.

3.3 Standard operating procedures should be consistent with the aircraft flight manual and the aircraft checklists to be used.

3.4 Standard operating procedures should take account of human factor principles.

4. CARRIAGE OF DANGEROUS GOODS

4.1 Refer to Part One Chapter 4.

5. CARRIAGE OF WEAPONS AND MUNITIONS OF WAR

5.1 Refer to Part One Chapter 4.

6. PORTABLE ELECTRONIC DEVICES

6.1 Refer to Part One Chapter 4.

CHAPTER 3 - FLIGHT OPERATIONS

1. OPERATING FACILITIES

1.1 An operator should 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.

2. OPERATIONAL MANAGEMENT

2.1 If an operator has an operating base in a State other than Hong Kong, the operator should notify the State in which the operating base is located.

2.2 Upon notification in accordance with paragraph 2.1 of this Chapter, safety and security oversight should be coordinated between the State in which the operating base is located and HKCAD.

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

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

2.5 Checklists should 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, are followed. The design and utilisation of checklists should observe Human Factors principles.

2.6 An operator should specify, for flights that are to be conducted in accordance with the instrument flight rules, the method of establishing terrain clearance altitudes.

2.7 An operator should ensure that no pilot-in-command operates to or from an aerodrome using operating minima lower than those which may be established for that aerodrome by the State in which it is located, except with the specific approval of that State.

2.8 An operator should 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 should address flight and duty times and be included in the operations manual.

2.9 An operator should ensure that passengers are made familiar with the location and use of:

(a) seat belts;

(b) emergency exits;

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

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

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

2.10 An operator should ensure that all persons on board are aware of the location and general manner of use of the principal emergency equipment carried for collective use.

2.11 An operator should ensure that in an emergency during flight, passengers are instructed in such emergency action as may be appropriate to the circumstances.

2.12 An operator should 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. FLIGHT PREPARATION

3.1 The operator should 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) 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;

(d) any load carried is properly distributed and safely secured;

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

3.2 An operator should 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 should be included in the operations manual.

3.3 Take-off alternate aerodrome

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

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

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

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

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

3.4 Destination alternate aerodromes

3.4.1 An operator should ensure that for any aircraft operated under IFR, at least one alternate aerodrome is nominated.

3.4.2 An aerodrome should not be nominated as an alternate unless the aerodrome has a notified instrument approach procedure and weather forecasts indicate that at the estimated time of arrival at the alternate aerodrome the cloud ceiling and visibility will be at or above the minima prescribed.

3.4.3 Where a destination is isolated and no suitable alternate is available, an alternate is not required if:

(a) an instrument approach procedure is available for use at the aerodrome of intended landing; and

(b) weather forecasts indicate that for at least 2 hours before and 2 hours after the estimated time of arrival and:

(i) the cloud base at the aerodrome will be at least 1,000 feet above the minima prescribed for the instrument procedure likely to be used, and visibility will be at least 5.5 km, or 4 km more than the minimum associated with the procedure; or

(ii) a point of no return (PNR) is determined; and

(iii) additional fuel reserves are carried to take account of any likely delays or the increased consumption that may result from system or powerplant failures.

3.5 Refuelling with passengers on board

3.5.1 An aeroplane should 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.

3.5.2 When refuelling with passengers embarking, on board or disembarking, two-way communication should 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.

3.6 Fuel requirements

3.6.1 An aeroplane should carry a sufficient amount of usable fuel to complete the planned flight safely and to allow for deviations from the planned operation.

3.6.2 The amount of usable fuel to be carried should, as a minimum, be based on:

(a) fuel consumption data:

(1) provided by the aeroplane manufacturer; or

(2) if available, current aeroplane-specific data derived from a fuel consumption monitoring system; and

(b) the operating conditions for the planned flight 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.

3.6.3 The pre-flight calculation of usable fuel required should include:

(a) taxi fuel

- which should 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;

(b) trip fuel

- which should 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 3.6.2 b) in this chapter;

(c) contingency fuel

- which should be the amount of fuel required to compensate for unforeseen factors. It should 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.

(d) destination alternate fuel

- which should be:

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

    (i) perform a missed approach at the destination aerodrome;

    (ii) climb to the expected cruising altitude;

    (iii) fly the expected routing;

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

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

(2) 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

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

(i) 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

(ii) 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;

(e) final reserve fuel

- which should be the amount of fuel on arrival at the destination alternate aerodrome, or the destination aerodrome when no destination alternate aerodrome is required:

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

(2) 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;

(f) additional fuel

- which should 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;

(g) discretionary fuel

- which should be the extra amount of fuel to be carried at the discretion of the pilot-in-command.

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

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

Notes: Nothing under paragraph 3.6 in this Chapter precludes the in-flight amendment of a flight plan to re-plan that flight to another aerodrome, provided that the requirements of paragraph 3.6 can be complied with from the point where the flight is re-planned.

3.7 In-flight fuel management

3.7.1 An operator should establish policies and procedures to ensure that in-flight fuel checks and fuel management are performed.

3.7.2 The pilot-in-command should 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. Guidance on flight planning including the circumstances that may require re-analysis, adjustment and/or re-planning of the planned operation before take-off or enroute, is contained in the Flight Planning and Fuel Management (FPFM) Manual (Doc 9976).

3.7.3 The pilot-in-command should 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.

3.7.4 The pilot-in-command should 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 pilot-in-command should 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. This is not an emergency situation but an indication that an emergency situation is possible should any additional delay occur.

3.7.5 The pilot-in-command should 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 3.6.3 (e) and is the minimum amount of fuel required upon landing at any aerodrome.

Note 2: The words "MAYDAY FUEL" describe the nature of the distress conditions as required in ICAO Annex 10, Volume II, 5.3.2.1.1, b) 3.

3.8 Additional requirements for operations beyond 60 minutes to an en-route alternate aerodrome

3.8.1 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.

4. IN-FLIGHT PROCEDURES

4.1 Use of oxygen

4.1.1 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 required in paragraph 3.6 of this Chapter.

4.1.2 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 oxygen mask which will readily supply oxygen upon demand.

4.2 Aeroplane operating procedures for noise abatement

4.2.1 Aeroplane operating procedures for noise abatement should comply with the provisions of PANS-OPS (ICAO Doc 8168), Volume I.

4.2.2 Noise abatement procedures specified by an operator for any one aeroplane type should be the same for all aerodromes.

4.3 Unless otherwise specified in an air traffic control instruction, to avoid unnecessary airborne collision avoidance system (ACAS II) resolution advisories in aircraft at or approaching adjacent altitudes or flight levels, pilots should consider using appropriate procedures to ensure that a rate of climb or descent of less than 8 m/s or 1,500 ft/min (depending on the instrumentation available) is achieved throughout the last 300 m (1,000 ft) of climb or descent to the assigned altitude or flight level, when made aware of another aircraft at or approaching an adjacent altitude or flight level.

5. DUTIES OF PILOT-IN-COMMAND

5.1 The pilot-in-command should ensure that the checklists specified in paragraph 2.5 of this Chapter are complied with in detail.

5.2 The pilot-in-command should 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 should take the forgoing action.

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

5.4 The pilot-in-command should be responsible for the journey log book or the general declaration.

6. FLIGHT CREW RESPONSIBILITIES

6.1 Each operator should ensure that all flight crew are familiar with and comply with the laws, regulations and procedures necessary to a flight, including but not limited to the following:

(a) the appropriate sections of the AN(HK)O; and

(b) any applicable conditions on the operator's instructions; and

(c) the procedures specified in the operator's required documentation; and

(d) such laws, regulations and procedures that may be relevant in those States in which the operation is to be conducted, including in particular those flight procedures and obstacle clearance criteria that may differ from those established by PANS-OPS; and

(e) procedures required at any aerodrome planned to be used as a destination or as an alternate, and procedures for air navigation facilities relating to such aerodromes.

7. CABIN BAGGAGE (TAKE-OFF AND LANDING)

7.1 An operator should specify procedures to ensure that all baggage carried onto an aeroplane and taken into the passenger cabin is adequately and securely stowed.

8. CABIN CREW AT EMERGENCY EVACUATION STATIONS

8.1 Whenever cabin crew are carried, those cabin crew that have emergency evacuation duties should occupy a seat provided during take off and landing and at such other times as the pilot in command may require.

8.2 Each cabin crew member should be seated with seat belt (or safety harness where provided) fastened during take off and landing and whenever the pilot in command so directs.

9. SIMULATING IN-FLIGHT SITUATIONS

9.1 An operator should ensure that on a flight when passengers are being carried:

(a) no emergency or abnormal situations are simulated; and

(b) no simulated instrument flight is conducted.

10. MINIMUM FLIGHT ALTITUDES

10.1 An operator should specify the method for establishing terrain clearance altitudes.

11. FLIGHT PLANNING

11.1 An operator should specify all flight planning procedures necessary for the safe conduct of the flight, taking account of, but not limited to, the following elements:

(a) aeroplane performance, taking account of any unserviceability; and

(b) operating limitations; and

(c) expected flight conditions on the route planned for the destination and any alternates; and

(d) the aerodromes planned to be used for landing or in the event of a diversion, and taking account of:

(i) ground facilities and/or water facilities; and

(ii) communications facilities; and

(iii) navigation aids

(e) such ATS requirements as may apply.

11.2 The operator should plan, perform, and control flights using meteorological information:

(a) provided for aviation purposes; or

(b) provided from a source that has been assessed by the operator for its reliability and accuracy and considered acceptable for the purpose of the flight.

11.3 The flight planning procedures should be detailed in the operations manual.

12. USE OF AERODROMES

12.1 An operator should ensure that an aircraft is not operated to or from an aerodrome unless the operator's procedures have identified that aerodrome as suitable for the purpose of taking-off or landing in that aircraft.

13. AERODROME OPERATING MINIMA

13.1 An operator should ensure that no pilot in command operates to or from an aerodrome, or plans the use of an aerodrome as a diversion or alternate aerodrome, using operating minima lower than those that may be established for that aerodrome by the State in which it is located, except with the specific approval of that State.

13.2 In determining aerodrome operating minima to be used by flight crew for a particular operation, the operator should take account of the following:

(a) the type, performance and handling characteristics of the aircraft; and

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

(c) the dimensions and characteristics of the runways or touch-down areas which may be selected for use; and

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

(e) the equipment available in the aircraft for the purpose of navigation or control of the flight path, as appropriate, during the take-off, approach, flare, landing or missed approach; and

(f) the obstacles in the approach and missed approach areas and the climb-out areas and necessary clearance; and

(g) the obstacle clearance altitude or height for the instrument approach procedures; and

(h) the means to determine and report meteorological conditions; and

(i) the availability and adequacy of emergency services.

14. OPERATING IN ICING CONDITIONS

14.1 An operator should ensure that procedures are in place to prevent:

(a) a take-off of an aircraft that has snow, ice, or frost adhering to the wings, rotors, stabilizers, or control surfaces; and

(b) a take-off in an aircraft that has snow, ice, or frost adhering to any propeller, windscreen, or powerplant installation, or to an airspeed, altimeter, rate of climb, or flight attitude instrument system; and

(c) an aircraft into known or forecast icing conditions unless the aircraft is certificated and equipped for flight in the type of known icing conditions; and

(d) take-off in an aircraft that has frost adhering to a propeller, windscreen, or powerplant installation unless such action is specifically permitted by the aircraft flight manual and the take-off is performed in accordance with the aircraft flight manual procedures.

15. INSTRUMENT APPROACH PROCEDURES

15.1 An operator should ensure that:

(a) crew procedures for carrying out instrument approaches are specified as standard operating procedures and included within the operations manual; and

(b) no pilot carrying out an instrument approach descends below a point 1,000 ft above the aerodrome unless the reported visibility or controlling RVR is equal to or above the specified minimum, except that if after descending below a point 1,000 ft above the aerodrome the reported visibility or controlling RVR falls below the specified minima the approach may be continued to DA/H or MDA/H.

Note 1: The pilot-in-command should also be satisfied that, with the runway surface condition information available, the aeroplane performance information indicates that a safe landing can be made.

Note 2: The procedures for using runway surface condition information on board aircraft are contained in the PANS-Aerodromes (Doc 9981) and in the performance section of the aeroplane flight manual.

16. REDUCED TAKE-OFF MINIMA

16.1 An operator should ensure that no pilot-in-command operates to or from an aerodrome using operating minima lower than those which may be established for that aerodrome by the State in which it is located, except with the specific approval of that State.

16.2 Operations using reduced take-off minima should only be carried out where:

(a) each flight crew member is qualified; and

(b) low visibility procedures are in force at the aerodrome; and

(c) reduced take-off minima are permitted on the runway to be used; and

(d) RVR values are available if the visibility is reported to be less than that required for landing and the required RVR values have been achieved for all relevant RVR reporting points; and

(e) minimum runway lighting requirements can be met; and

(f) an adequate visual segment is visible to the pilot-in-command at the start of the take off run; and

(g) any aeroplane equipment specified for low visibility take-offs is serviceable at the commencement of the take off; and

(h) if the aeroplane is a two-engine propeller-driven aeroplane, the aeroplane is equipped with an operative auto-feather, auto-coarse or equivalent drag reducing system; and

(i) a take-off alternate aerodrome has been nominated.

17. LOW VISIBILITY APPROACHES

17.1 Each operator should ensure that no Category II or Category III operations are conducted unless:

(a) Category II/III operations have been approved; and

(b) operations are conducted in accordance with the operator's Category II/III approach procedures manual; and

(c) the aeroplane is certificated for operations with decision heights below 200 ft, or with no decision height; and

(d) the aeroplane is equipped in accordance with the operator's Category II/III approach procedures manual; and

(e) the operator's maintenance programme specifies procedures for maintenance of aeroplane guidance systems; and

(f) the runway visibility is established using RVR; and

(g) a record is kept of each Category II/III approach made with details of:

(i) the meteorological conditions at the time of the approach, and

(ii) whether the approach was satisfactory or unsatisfactory, and

(iii) the reason for any unsatisfactory approach or landing, if any.

18. OPERATIONS IN REQUIRED NAVIGATION PERFORMANCE (RNP) DESIGNATED AIRSPACE

18.1 An operator should ensure that no aircraft is operated in RNP designated airspace unless:

(a) An Operational Approval issued by HKCAD for the corresponding RNP specification is obtained; and

(b) procedures for RNP operations are specified in the operations manual; and

(c) the instruments and equipment required for that RNP operation have been inspected and maintained in accordance with a maintenance programme approved; and

(d) flight crew comply with all notified procedures, instructions and limitations relating to the designated RNP airspace.

19. MINIMUM NAVIGATION PERFORMANCE SPECIFICATION (MNPS) OPERATIONS

19.1 An operator should ensure that no aircraft is operated in airspace where minimum navigation performance specifications have been prescribed unless:

(a) MNPS operations procedures have been approved for that aircraft and aircraft navigation system; and

(b) procedures for MNPS operations are specified in the operations manual; and

(c) the navigation equipment required for that MNPS operation has been inspected and maintained in accordance with an approved maintenance programme; and

(d) flight crew comply with all notified procedures, instructions and limitations relating to the designated MNPS airspace.

20. REDUCED VERTICAL SEPARATION MINIMA (RVSM)

20.1 An operator should ensure that no aircraft is operated in airspace where reduced vertical separation minima apply unless:

(a) RVSM operations procedures have been approved for that aircraft and aircraft navigation system; and

(b) procedures for RVSM operations are specified in the operations manual; and

(c) the navigation equipment required for that RVSM operation has been inspected and maintained in accordance with a maintenance programme; and

(d) flight crew comply with all notified procedures, instructions and limitations relating to the designated RVSM airspace and have received appropriate initial and recurrent training .

21. ELECTRONIC NAVIGATION DATA MANAGEMENT

21.1 An operator of an aircraft should not utilize electronic navigation data products unless the operator has procedures for ensuring that:

(a) the product standard and quality is acceptable; and

(b) the products delivered have met acceptable standards of integrity; and

(c) the products are compatible with the intended function of the equipment that will use them; and

(d) there is timely distribution and insertion of current and unaltered electronic navigation data to all aeroplanes that require it.

22. COSMIC RADIATION

22.1 An operator should ensure that:

(a) an assessment is made of the exposure to cosmic radiation of those crew members who are liable to an exposure in excess of 1 milliSievert per year; and

(b) the exposure to cosmic radiation is taken account of when planning flight schedules; and

(c) should ensure that crew members are informed of the health risks their work involves; and

(d) any exposure to cosmic radiation of a pregnant crew member should be as low as reasonably can be achieved and that exposure should be unlikely to exceed 1 milliSievert during the remainder of her pregnancy.

22.2 An operator should ensure that for any flight operated above 49,000 ft:

procedures for operating above 49,000ft and for the use of monitoring programme should be specified in the operations manual.

23. EMERGENCY RESPONSE PLAN

23.1 An operator should have a plan detailing the procedures to be followed in the event of an accident, incident or other emergency. Compliance with the plan is required in the case of accidents involving substantial damage to aircraft or injury to passengers, crew members or persons on the ground. In the case of other accidents, incidents or emergencies, compliance will be at the discretion of the operator, subject to any legal requirements imposed by the law of Hong Kong or the law of State in which the accident or incident occurred.

23.2 The emergency response plan must address in-flight incidents involving injuries to, or serious medical problems suffered by, passengers or crew members.

23.3 The emergency response plan must also address accidents and incidents not involving aircraft flight operations, such as those occurring during aircraft maintenance activities.

23.4 The emergency response plan should include, as applicable:

(a) depending on the nature and location of the accident, procedures for the flight crew or organisation to notify the appropriate authority in the State where the accident occurred and to seek medical assistance, as required;

(b) procedures for the operator's personnel to notify organisation officials of the accident, incident or other event;

(c) procedures for the operator to notify State agencies of the accident, as may be required by law;

(d) procedures for notification of next of kin;

(e) on-site procedures to be taken by the flight and cabin crew to assist passengers, prepare visual distress signals (if in a remote area), and preserve the integrity of the accident site;

(f) procedures for dealing with questions from and providing assistance to the families of passengers and crew members;

(g) procedures for dealing with questions from the media;

(h) procedures for participating or co-operating with State agencies and police authorities who may be investigating the accident; and

(i) considerations for dealing with the effects of the accident on the organisation's operations and on employees (i.e. trauma counselling services and other crises intervention support for persons involved or affected by the event).

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CHAPTER 4 - AEROPLANE PERFORMANCE OPERATING LIMITATIONS

1. APPLICABLE TO AEROPLANES CERTIFICATED IN ACCORDANCE WITH PARTS IIIA AND IIIB OF ICAO ANNEX 8

1.1 An aeroplane should be operated in compliance with the terms of its certificate of airworthiness and within the approved operating limitations contained in its flight manual.

1.2 In applying the standards of this chapter, account should 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, the slope of the runway, the ambient temperature, wind, and surface condition of 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 should 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.

Note: Guidelines for using runway surface condition information on board aircraft in accordance with 2.2.4.4 are contained in the PANS-Aerodromes (Doc 9981) and in the Aeroplane Performance Manual (Doc 10064).

1.3 Mass limitations

1.3.1 The mass of the aeroplane at the start of take-off should not exceed the mass at which paragraph 1.4 of this Chapter is complied with, nor the mass at which paragraphs 1.5 and 1.6 of this Chapter are complied with, allowing for expected reductions in mass as the flight proceeds, and for such fuel jettisoning as is envisaged in applying paragraphs 1.5 and 1.6 of this Chapter and, in respect of alternate aerodromes, paragraphs 1.3.3 and 1.6 of this Chapter.

1.3.2 In no case should 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.

1.3.3 In no case should 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..

1.3.4 In no case should 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 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.

1.4 Take-off

1.4.1 The aeroplane should be able, in the event of a critical power-unit 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 paragraph 1.5 of this Chapter. In determining the length of the runway available, account should be taken of the loss, if any, of runway length due to alignment of the aeroplane prior to take-off.

Note: "An adequate margin" referred to in this provision is illustrated by the appropriate examples included in the Aeroplane Performance Manual (Doc 10064).

1.5 En route — one power-unit inoperative

1.5.1 The aeroplane should 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 standard of paragraph 1.6 of this Chapter can be met, without flying below the minimum obstacle clearance altitude at any point.

1.6 Landing

1.6.1 The aeroplane should, 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 should be made for expected variations in the approach and landing techniques, if such allowance has not been made in the scheduling of performance data.

Note: Guidance on appropriate margins for at the time of landing assessment are contained in the Aeroplane Performance Manual (Doc 10064).

2. PERFORMANCE DATA

2.1 Each operator should ensure that for each aircraft it operates the performance data used is:

(a) contained in the aircraft flight manual; or

(b) where provided by the aircraft manufacturer or other source, contained in an equivalent document; and

(c) available to all flight crew or other persons responsible for flight planning or aircraft dispatch.

3. PERFORMANCE

3.1 An operator should ensure that no flight is commenced unless account has been taken of all factors that significantly affect the performance of the aircraft, including but not limited to:

(a) Weight; and

(b) Operating procedures; and

(c) Pressure altitude of aerodrome; and

(d) Temperature; and

(e) Wind; and

(f) Runway gradient; and

(g) Condition of runway; and

(h) Water surface state (where relevant); and

(i) Aircraft configuration

3.2 An operator should take account of the accuracy of charts and other data used during performance planning, when assessing whether a flight can be safely operated.

4. WET AND CONTAMINATED RUNWAY SURFACES

4.1 Each operator should ensure that where it is necessary for a take-off to be made on a runway contaminated with water, slush, snow or ice the pilot-in-command should take account of:

(a) the runway overrun area; and

(b) local wind conditions, including any element of tailwind or crosswind; and

(c) height of any snow banks adjacent to the runway.

5. TAKE OFF WEIGHT

5.1 An operator should ensure that:

(a) the weight of the aeroplane at the start of any take off should not exceed:

(i) the weight at which paragraph 6 of this Chapter can be complied with; and

(ii) the weight at which paragraphs 7 and 8 of this Chapter can be complied with, allowing for expected reductions in weight as the flight proceeds, for any fuel jettisoning that may be envisaged, and the use of alternate aerodromes; and

(b) in no case should the weight at the start of take off exceed the maximum take off weight specified in the flight manual for that pressure altitude appropriate to the aerodrome elevation and, if used as a parameter to determine the maximum take off weight any other local atmospheric condition; and

(c) in no case should the estimated weight for the expected time of landing at the planned destination aerodrome and at any destination alternate aerodrome, exceed the maximum landing weight specified in the flight manual for the pressure altitude appropriate to the aerodrome elevation(s), and if used as a parameter to determine the maximum landing weight, any other local atmospheric condition; and

(d) in no case should the weight at the start of take off, or at the expected time of landing at the planned destination aerodrome and any destination alternate aerodrome, exceed the relevant maximum weights at which compliance has been demonstrated with the applicable noise certification standards, unless otherwise authorized in exceptional circumstances for a certain aerodrome or at a runway where there is no noise disturbance problem by the relevant authority of the State in which the runway is located.

6. AEROPLANE CLIMB PERFORMANCE

6.1 An operator should ensure that pilots are provided with operating instructions and with information on aeroplane climb performance sufficient 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 using the intended take off technique.

6.2 The information required by paragraph 5.1(a) of this Chapter should be made available within the operations manual.

7. ENROUTE WEIGHT

7.1 An operator should ensure that any aeroplane of MTWA greater than 5,700kg should be able, in the event of the critical engine becoming inoperative at any point along the route or any planned diversion route, to continue the flight to an aerodrome at which the requirements of paragraph 8 of this Chapter can be met, without flying below the minimum obstacle clearance altitude at any point.

8. LANDING WEIGHT

8.1 An operator should ensure that:

(a) an aeroplane should at the planned destination aerodrome and at any alternate aerodrome, after clearing all obstacles in the approach path by a safe margin, be able to land, with assurance that the aeroplane will be able to come to a stop (or for a seaplane to a satisfactorily low speed) within the landing distance available.

(b) when calculating whether an aeroplane will be able to comply with paragraph 8.1(a) of this Chapter, allowance should be made for expected variations in the approach and landing techniques used.

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CHAPTER 5 - AEROPLANE FLIGHT CREW

1. COMPOSITION OF FLIGHT CREW

1.1 For each flight the operator should designate a pilot to act as pilot-in-command.

1.2 The Operator should assign to each member of flight crew the functions to be carried out in the event of an aircraft emergency and of an emergency evacuation becoming necessary.

1.3 An operator should ensure that no aircraft is operated unless it carries at least the number of crew members required by the aircraft flight manual or otherwise specified by the Type Certificate design specification.

2. PROFICIENCY IN THE ENGLISH LANGUAGE

2.1 An operator should ensure that flight crew members demonstrate the ability to speak and understand the English Language to the proficiency level required by ICAO Annex 1.

2.2 An operator should ensure that all crew members have the ability to speak and understand the English Language to the extent necessary for effective communication to occur between flight crew and other crewmembers.

3. FLIGHT CREW MEMBER EMERGENCY DUTIES

3.1 An operator should, 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 should be contained in the operator's training programme and should 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.

4. FLIGHT CREW MEMBER TRAINING PROGRAMMES

4.1 An operator should 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. Ground and flight training programmes should be established, either through internal programmes or through a training services provider, and should include or make reference to a syllabus for those training programmes in the company operations manual. The training programme should include training to competency for all equipment installed.

5. QUALIFICATIONS

5.1 Flight crew member licensing

5.1.1 An operator should:

(a) ensure that each flight crew member assigned to duty holds a valid licence issued by the HKCAD; or under special circumstances, holds a valid licence issued by another Contracting State, and rendered valid by the HKCAD (for details please refer to CAD 54);

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

(c) be satisfied that flight crew members are competent to carry out assigned duties.

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

5.3 An operator should not assign a pilot to act as pilot-in-command of an aeroplane 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.

5.4 An operator should 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.

5.5 An operator should 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, an operator should ensure that the pilot's competence to comply with such rules is demonstrated to a pilot authorized as an examiner by HKCAD.

6. CABIN CREW

6.1 The operator should determine the number of cabin crew required for each aircraft operation. The determination of the number of cabin crew required should take account of:

(a) seating capacity of the aircraft: and

(b) number of passengers carried; and

(c) the necessary functions to be performed in an emergency or a situation requiring emergency evacuation; and

(d) the need to effect a safe and expeditious evacuation of the aircraft; and

(e) Adding or as required by the AFM; and

(f) As required by the AN(HK)O 1995.

6.2 The operator should assign to cabin crew the functions to be carried out in the event of an aircraft emergency and of an emergency evacuation becoming necessary.

6.3 Each cabin crew member should be seated with seat belt or, when provided, safety harness fastened during take-off and landing and whenever the pilot-in-command so directs.

6.4 An operator should ensure that a training programme is completed by all persons before being assigned as a cabin crew member.

7. PSYCHOACTIVE SUBSTANCES

7.1 An operator should ensure that:

(a) no crew member is permitted to perform duties on an aircraft while under the influence of any psychoactive substance, including prescribed or proprietary medication, which might render them unable to exercise those duties safely and properly or create a risk of harm to any other person; and

(b) no flight is commenced if any flight crew member will be prevented from performing his duties as a result of incapacitation by any cause such as injury, sickness, fatigue, or the effects of alcohol or drugs; and

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

CHAPTER 6 - TRAINING

1. TRAINING PROGRAMME

1.1 An operator should establish and maintain a training programme to ensure that any person assigned duties in relation to the safe operation of the operator's aircraft has the training necessary to perform their assigned duties, including skills in relation to human performance.

1.2 The training programme required by paragraph 1.1 of this Chapter should be designed to ensure that any person assigned duties in relation to the safe operation of the operator's aircraft has achieved the necessary level of competency and is able to maintain that level of competency.

1.3 Ground and flight training programmes should be established either through internal programmes or through the use of a training services provider.

1.4 The operator should include the training programme syllabus within the Operations manual either directly or by reference to a training manual.

2. TRAINING FOR FLIGHT CREW

2.1 The training programme should provide for flight crew to be trained in normal, abnormal and emergency situations, including the emergency evacuation of the aircraft.

2.2 Flight Crew should be trained in the use of the operator's Standard Operating Procedures.

2.3 An operator should utilize aircraft flight simulators as part of the training programme for flight crew to the maximum extent possible.

2.4 Training programmes for flight crew should include training to competency for all equipment installed on the aircraft.

2.5 Training programmes for flight crew should include knowledge of crew resource management, threat and error management, the carriage of dangerous goods and such particular requirements as may apply to the Operation. Dangerous goods awareness training should apply regardless of whether the Operator holds an approval to carry dangerous goods.

2.6 Aircraft Ground Training to ensure that each flight crew member has knowledgeable of aircraft systems and all normal, abnormal, and emergency procedures. The following subjects should be included:

(a) aircraft systems operation and limitations as contained in the aircraft flight manual and aircraft operating manual and standard operating procedures;

(b) operation of all the aircraft equipment;

(c) differences in equipment, operation, and layout between aircraft of the same type, if applicable;

(d) normal, abnormal and emergency procedures for the aircraft;

(e) aircraft performance and limitations;

(f) weight/mass and balance system procedures;

(g) MEL training (when a MEL has been established); and

(h) aircraft servicing and ground handling.

2.7 The use of flight simulators for flight training is highly recommended. An operator with a programme that uses an approved Level C or higher simulator is normally permitted to conduct initial and upgrade training in the simulator. This level of simulator usually meets the requirements for recurrent and six month take-off and landing day/night currency requirements to carry passengers. Operators should confirm this with HKCAD.

2.8 Flight simulator programmes should cover the following subjects as contained in the Aircraft Flight Manual and the aircraft operating manual used by the operator.

(a) Procedures for normal, abnormal and emergency operation of the aircraft systems and components including:

(i) use of aircraft checklists;

(ii) flight and cabin crew resource management training;

(iii) aircraft fire on the ground and while airborne;

(iv) engine fire or failure;

(v) effects of engine icing and anti-ice operation;

(vi) take-off, landing and when applicable, flight with critical engine inoperative including driftdown and engine inoperative performance capabilities;

(vii) loss of pressurisation and emergency descent (as applicable);

(viii) flight control failures and degraded states of operation;

(ix) hydraulic, electrical and other system failures;

(x) failure of navigation and communication equipment;

(xi) pilot incapacitation;

(xii) approach to the stall (ground contact imminent and ground contact not a factor) (as applicable);

(xiii) normal and abnormal flight characteristics applicable to the aircraft category and type. These may include such items as: dutch roll, buffet boundary onset, jet upset, steep turns, static & dynamic rollovers, loss of tail rotor effectiveness, vortex ring, etc. (as applicable to the category, class and type of aircraft);

(xiv) aircraft performance for climb, cruise, holding, descent, landing and diversion;

(xv) normal, noise abatement and maximum performance take-off;

(xvi) aircraft performance calculations, including take-off and landing speeds, weight and balance, height velocity curve, HOGE, settling with power, and centre of gravity (as applicable);

(xvii) rejected take-off procedures and rejected landings;

(xviii) passenger and crew evacuation; and

(xix) FMS, GPWS/TAWS, TCAS, ACAS and other specialized equipment installed in the aircraft, as applicable.

(b) Flight planning and instrument flight procedures:

(i) departure, en-route, holding, arrival and in-flight diversion;

(ii) precision, non-precision and missed approaches in minimum visibility conditions;

(iii) precision, non-precision and missed approaches using automatic, flight director and degraded states of operation;

(iv) Category II and Category III approaches, as applicable; and

(v) testing and reviews.

3. CABIN CREW

3.1 The training programme required by paragraph 1 of this Chapter should provide for cabin crew to be trained in normal, abnormal and emergency situations, including the emergency evacuation of the aircraft, before being assigned duty as a cabin crew member.

3.2 Cabin crew should receive training in their actions and responsibilities in regard to the carriage of dangerous goods.

4. SECURITY TRAINING

4.1 An operator implementing a security programme should establish and maintain an appropriate training programme to ensure that any crew member is able to take appropriate action to prevent acts of unlawful interference and to minimize the consequences of such occurrences should they occur.

CHAPTER 7 - FLIGHT AND DUTY TIME LIMITS

1. FATIGUE MANAGEMENT PROGRAMME

1.1 An operator should establish and implement a fatigue management programme to ensure that all personnel involved in the operation and maintenance of aircraft do not carry out their duties when fatigued.

1.2 The fatigue management programme should specify the flight and duty times for aircraft crew members.

1.3 Details of the fatigue management programme should be stipulated in the operations manual.

1.4 The adoption of the guidance material as stated in GM 6.13 Fatigue Management of "IS-BAO – An International Standard for Business Aircraft Operations" or "Business Jet Operations" section under the CAD 371 Second Edition can be considered as alternative means of compliance to the requirements stated in this Chapter.

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CHAPTER 8 - DOCUMENTS AND RECORDS

1. JOURNEY LOG BOOK OR EQUIVALENT RECORD

1.1 Each operator should ensure that an accurate journey log book (or equivalent record) is kept for each flight or series of flights and contains:

(a) aircraft nationality and registration; and

(b) date; and

(c) names of crew members; and

(d) duty assignments of crew members; and

(e) place of departure; and

(f) place of arrival; and

(g) time of departure; and

(h) time of arrival; and

(i) hours of flight; and

(j) nature of flight; and

(k) incidents and observations (if any); and

(l) signature of person in charge.

1.2 Each operator should ensure each daily flight record is kept for a period of 6 months after the date of the record.

2. DOCUMENTS TO BE CARRIED

2.1 The operator should ensure that a flight is not commenced unless the following documents are in force and will remain so for the duration of the flight:

(a) the valid Certificate of Airworthiness or Permit to Fly; and

(b) the Certificate of Registration for the aircraft; and

(c) the aircraft radio station licence; and

(d) a copy of any permissions, authorisations or exemptions relevant to the flight; and

(e) a noise certification document, if applicable; and

(f) a copy of the dangerous goods approval, if applicable.

2.2 An operator should have procedures in place to ensure that the following documents are carried on the flight:

(a) the flight crew licences of each member of the flight crew; and

(b) current maps and/or charts of the route to be operated and any other routes which the aircraft may operate in the event of the aircraft diverting; and

(c) essential data relating to the search and rescue facilities in the areas in which the flight will be operated, or may be operated in the event of a diversion, and including the ground-air signal codes; and

(d) a copy of the notified procedures to be followed by the pilot-in-command of an intercepted aircraft, and the notified visual signals for use by intercepting and intercepted aircraft; and

(e) the flight manual for the aircraft, or equivalent document; and

(f) the operations manual, or those parts of it that apply to flight operations; and

(g) any other document(s) as required by AN(HK)O 1995.

3. AIRCRAFT FLIGHT MANUAL

3.1 An operator should ensure that the aircraft flight manual is kept fully up to date.

4. RECORDS

4.1 The operator of an aircraft that has aircraft flight recorders installed should ensure that, in the event of the aircraft becoming involved in an accident or incident, the related flight records and, if necessary, the flight recorders, should be retained in a safe place until the investigating authority has determined their disposition.

4.2 The operator should maintain lists of information on the emergency and survival equipment carried on the aircraft. The lists should include details of:

(a) number, colour and type of life raft carried; and

(b) pyrotechnics carried; and

(c) details of emergency medical supplies; and

(d) water supplies; and

(e) type and frequencies of emergency portable radio equipment.

4.3 Records of any deviation from the specified limitations of the fatigue management programme should be maintained for a period of 12 months, or as specified by the operator's safety management system, whichever is greater.

4.4 Cosmic Radiation records

4.4.1 An operator should keep records of the assessment of the exposure of crewmembers to cosmic radiation for a minimum period of 12 months.

4.4.2 An operator should keep written records of the exposure to cosmic radiation of those crewmembers who are liable to an exposure in excess of 1 milliSievert per year for a minimum period of 24 months.

4.4.3 Where an operator assesses individual exposure to cosmic radiation, the records should include:

(a) the names of the crew member; and

(b) the detail of each assessment of exposure to cosmic radiation (in milliSieverts per year; and

(c) the date of the assessment.

4.4.4 Where an operator does not assess individual exposure to cosmic radiation but instead assesses the exposure of groups of crew members, the records should include:

(a) the names of all crew members covered by the assessment; and

(b) the maximum dose of cosmic radiation (in milliSieverts per year) to which those crew members are likely to be exposed; and

(c) how the dose has been calculated; and

(d) the period of time that the assessment is valid.

CHAPTER 9 - FLIGHT RECORDERS

1. FLIGHT DATA RECORDERS (FDR)

1.1 General Requirements

1.1.1 The FDR is to record continuously during flight time.

1.1.2 The FDR container is to:

(a) be painted a distinctive orange or yellow colour;

(b) carry reflective material to facilitate its location; and

(c) have securely attached an automatically activated underwater locating device.

1.1.3 The FDR is to be installed so that:

(a) the probability of damage to the recording is minimized. To meet this requirement it should be located as far aft as practicable. In the case of pressurized aeroplanes it should be located in the vicinity of the rear pressure bulkhead;

(b) it receives its electrical power from a bus that provides the maximum reliability for operation of the FDR without jeopardizing service to essential or emergency loads; and

(c) there is an aural or visual means for pre-flight checking that the FDR is operating properly.

2. COCKPIT VOICE RECORDER (CVR)

2.1 General requirements

2.1.1 The CVR is to be designed so that it will record 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;

(d) voice or audio signals identifying navigation or approach aids introduced in the headset or speaker;

(e) voice communication of flight crew members using the passenger address system, if installed; and

(f) digital communications with ATS, unless recorded by the FDR.

2.1.2 The CVR container is to:

(a) be painted a distinctive orange or yellow colour;

(b) carry reflective material to facilitate its location; and

(c) have securely attached an automatically activated underwater locating device.

2.1.3 To aid in voice and sound discrimination, microphones in the cockpit are to be located in the best position for recording voice communications originating at the pilot and co-pilot stations and voice communications of other crew members on the flight deck when directed to those stations. This can best be achieved by wiring suitable boom microphones to record continuously on separate channels.

2.1.4 The CVR is to be installed so that:

(a) the probability of damage to the recording is minimized. To meet this requirement it should be located as far aft as practicable. In the case of pressurized aeroplanes it should be located in the vicinity of the rear pressure bulkhead;

(b) it receives its electrical power from a bus that provides the maximum reliability for operation of the CVR without jeopardizing service to essential or emergency loads;

(c) there is an aural or visual means for pre-flight checking of the CVR for proper operation; and

(d) if the CVR has a bulk erasure device, the installation should be designed to prevent operation of the device during flight time or crash impact.

3. INSPECTIONS OF FDR AND CVR SYSTEMS

3.1 Prior to the first flight of the day, the built-in test features on the flight deck for the CVR, FDR and flight data acquisition unit (FDAU), when installed, should be monitored.

3.2 Annual inspections should be carried out as follows:

(a) the readout of the recorded data from the FDR and CVR should ensure that the recorder operates correctly for the nominal duration of the recording;

(b) the analysis of the FDR should evaluate the quality of the recorded data to determine if the bit error rate is within acceptable limits and to determine the nature and distribution of the errors;

(c) a complete flight from the FDR should be examined in engineering units to evaluate the validity of all recorded parameters. Particular attention should be given to parameters from sensors dedicated to the FDR. Parameters taken from the aircraft's electrical bus system need not be checked if their serviceability can be detected by other aircraft systems;

(d) the readout facility should have the necessary software to accurately convert the recorded values to engineering units and to determine the status of discrete signals;

(e) an annual examination of the recorded signal on the CVR should be carried out by replay of the CVR recording. While installed in the aircraft, the CVR should record test signals from each aircraft source and from relevant external sources to ensure that all required signals meet intelligibility standards; and

(f) where practicable, during the annual examination, a sample of in-flight recordings of the CVR should be examined for evidence that the intelligibility of the signal is acceptable.

3.3 Flight recorder systems should 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.

3.3.1 A report of the annual inspection should be made available on request to the HKCAD for monitoring purposes.

3.4 Calibration of the FDR system:

(a) the FDR system should be re-calibrated at least every five years 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 should be a re-calibration performed as recommended by the sensor manufacturer, or at least every two years.

CHAPTER 10 – AEROPLANES EQUIPPED WITH AUTOMATIC LANDING SYSTEMS, HUD OR EQUIVALENT DISPLAYS, EVS, SVS OR CVS

1. OPERATIONAL CRITERIA

1.1 In establishing operational criteria for the use of automatic landing systems, a HUD or equivalent displays, EVS, SVS or CVS, operators/owner should demonstrate to the HKCAD that:

(a) the equipment meets the appropriate airworthiness certification requirements;

(b) the operator/owner has carried out a safety risk assessment associated with the operations supported by the automatic landing systems, a HUD or equivalent displays, EVS, SVS or CVS;

(c) the operator/owner has established and documented the procedures for the use of, and training requirements for automatic landing systems, a HUD or equivalent displays, EVS, SVS or CVS.

Note 1: Guidance on safety risk assessments is contained in the SafetyManagement Manual (SMM) (Doc 9859).

Note 2: Guidance on establishing operational criteria is contained in Attachment2.B of ICAO Annex 6, Part II.

2. OPERATIONAL CREDIT(S)

2.1 For Hong Kong registered aircraft, the HKCAD may approve operational credit(s) for operations with aeroplanes equipped with automatic landing systems, a HUD or equivalent displays, EVS, SVS or CVS. Such approvals should not affect the classification of the instrument approach procedure.

Note: Guidance on operational credit(s) for aircraft equipped with automatic landing systems, a HUD or equivalent displays, EVS, SVS and CVS is contained in Attachment 2.B of ICAO Annex 6, Part II and in the Manual of All-Weather Operations (Doc 9365).

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PART THREE – NON-PUBLIC TRANSPORTS OPERATIONS (HELICOPTERS)

SECTION I GENERAL

CHAPTER 1 - DEFINITIONS

In this document, where a term is used which is defined in a relevant ICAO Annex or ICAO publication, please refer to Chapter One of CAD 360 – Helicopter Supplement, Guidance for Helicopter AOC Holders.

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SECTION II INTERNATIONAL NON-PUBLIC TRANSPORTS OPERATIONS

CHAPTER 1 – GENERAL

1. PURPOSE

1.1 The requirements of this Part cover the operation of all helicopters in international civil aviation operations.

2. APPLICABILITY

2.1 This Part applies to operators carrying out, or intending to carry out, non-public transport external air navigation using Hong Kong registered helicopters except for those flights operated in accordance with the terms of the AOC by a holder of such certificate granted in accordance with Article 6 of the AN(HK)O 1995; or for flights operated by the Government Flying Service, which is required to upkeep a general standard equivalent to those maintained by an AOC holder.

3. SPECIFIC APPROVALS

3.1 The pilot-in-command should not conduct operations for which a specific approval is required unless such approval has been issued by the State of Registry or the HKCAD. For Hong Kong registered helicopters, application forms for specific approvals are available on the HKCAD website.

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CHAPTER 2 – FLIGHT OPERATIONS

1. ADEQUACY OF OPERATING FACILITIES

1.1 The pilot-in-command should not commence a flight unless it has been ascertained by every reasonable means available that the ground and/or water facilities available and directly required for such flight and for the safe operation of the helicopter are adequate including communication facilities and navigation aids.

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

2. OPERATIONS MANUAL

2.1 Each operator should provide an operations manual containing all the instructions and information necessary for operations personnel to perform their duties.

2.2 The operator should ensure that all staff members have ready access to the operations manual, or to those parts of the operations manual that relate to their duties.

2.3 The operator should ensure that the operations manual is kept up to date in a timely manner.

2.4 Amendments and revisions should be issued to all staff members required to use the operations manual.

2.5 The operations manual should normally include at least the following elements:

(a) table of contents, amendment control and list of effective pages; and

(b) duties, responsibilities and succession of management and operating personnel; and

(c) a description of operational control system; and

(d) MEL procedures, if applicable; and

(e) normal flight operations; and

(f) SOP's; and

(g) weather limitations; and

(h) emergency operations; and

(i) accident / incident considerations; and

(j) personnel qualifications & training; and

(k) record keeping; and

(l) a description of the maintenance control system; and

(m) details of any extended operations over a hostile environment, if applicable; and

(q) procedures for steep approaches, if applicable.

3. HELIPORT OR LANDING LOCATION OPERATING MINIMA

3.1 The pilot-in-command should establish operating minima in accordance with criteria specified in ICAO Document 9365 – Manual of All-Weather Operations, for each heliport or landing location to be used in operations. Such minima should not be lower than any that may be established by the State of the Aerodrome, except when specifically approved by the State.

4. BRIEFING

4.1 The pilot-in-command should ensure that crew members and passengers are made familiar, by means of an oral briefing or by other means, with the location and the use of:

(a) seat belts or harnesses; and, as appropriate,

(b) emergency exits;

(c) life jackets;

(d) oxygen dispensing equipment; and

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

4.2 The pilot-in-command should 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.

5. HELICOPTER AIRWORTHINESS AND SAFETY PRECAUTIONS

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

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

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

(c) any necessary maintenance has been performed in accordance with Part 4 of this Manual;

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

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

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

6. WEATHER REPORTS AND FORECASTS

6.1 Before commencing a flight the pilot-in-command should be familiar with all available meteorological information appropriate to the intended flight. Preparation for a flight away from the vicinity of the place of departure, and for every flight under IFR, should include: 1) a study of available current weather reports and forecasts; and 2) the planning of an alternative course of action to provide for the eventuality that the flight cannot be completed as planned, because of weather conditions.

7. LIMITATIONS IMPOSED BY WEATHER CONDITIONS

7.1 Flight in accordance with VFR

A flight, except one of purely local character in visual meteorological conditions, to be conducted in accordance with VFR should not be commenced unless current meteorological reports, or a combination of current reports and forecasts, indicate that the meteorological conditions along the route, or that part of the route to be flown under VFR, will, at the appropriate time, be such as to enable compliance with these rules.

7.2 Flight in accordance IFR

When an alternate is required - A flight to be conducted in accordance with IFR should not be commenced unless the available information indicates that conditions, at the heliport of intended landing and at least one alternate heliport will, at the estimated time of arrival, be at or above the heliport operating minima.

When no alternate is required - A flight to be conducted in accordance with IFR to a heliport when no alternate heliport is required should not be commenced unless available current meteorological information indicates that the following meteorological conditions will exist from two hours before to two hours after the estimated time of arrival, or from the actual time of departure to two hours after the estimated time of arrival, whichever is the shorter period:

(a) a cloud base of at least 120 m (400 ft) above the minimum associated with the instrument approach procedure; and

(b) visibility of at least 1.5 km more than the minimum associated with the procedure.

Note - These should be considered as minimum values where a reliable and continuous meteorological watch is maintained. When only an “area” type forecast is available these values should be increased accordingly.

7.3 Heliport operating minima

A flight should not be continued towards the heliport of intended landing unless the latest available meteorological information indicates that conditions at that heliport, or at least one alternate heliport, will, at the estimated time of arrival, be at or above the specified heliport operating minima.

An instrument approach should not be continued below 300 m (1,000 ft) above the heliport elevation or into the final approach segment unless the reported visibility or controlling RVR is at or above the heliport operating minima..

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

7.4 Flight in icing conditions

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

8. ALTERNATE HELIPORTS

8.1 For a flight to be conducted in accordance with IFR, at least one alternate heliport or landing location should be specified in the operational flight plan and the flight plan, unless:

(a) the weather conditions in paragraph 7.2 of this Chapter prevail; or

(b) (i) the heliport or landing location of intended landing is isolated and no alternate heliport or landing location is available; and

(ii) an instrument approach procedure is prescribed for the isolated heliport of intended landing; and

(iii) a point of no return (PNR) is determined in case of an offshore destination.

8.2 Suitable offshore alternates may be specified subject to the following:

(a) the offshore alternates should be used only after passing a PNR. Prior to a PNR, onshore alternates should be used;

(b) mechanical reliability of critical control systems and critical components should be considered and taken into account when determining the suitability of the alternate;

(c) one engine inoperative performance capability should be attainable prior to arrival at the alternate;

(d) to the extent possible, deck availability should be guaranteed; and

(e) weather information must be reliable and accurate.

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

8.3 Offshore alternates should not be used when it is possible to carry enough fuel to have an onshore alternate. Offshore alternates should not be used in a hostile environment.

9. FUEL AND OIL REQUIREMENTS

9.1 All helicopters. A flight should not be commenced unless, taking into account both the meteorological conditions and any delays that are expected in flight, the helicopter carries sufficient fuel and oil to ensure that it can safely complete the flight. In addition, a reserve should be carried to provide for contingencies.

9.2 VFR operations. The fuel and oil carried in order to comply with paragraph 9.1 of this Chapter should, in the case of VFR operations, be at least the amount sufficient to allow the helicopter to:

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

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

(c) have an additional amount of fuel, sufficient to provide for the increased consumption on the occurrence of potential contingencies.

9.3 IFR operations. The fuel and oil carried in order to comply with paragraph 9.1 of this Chapter should, in the case of IFR operations, be at least the amount to allow the helicopter:

9.3.1 When no alternate is required, in terms of paragraph 7.2 of this Chapter, to fly to and execute an approach at the heliport or landing location to which the flight is planned, and thereafter to have:

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

(b) an additional amount of fuel, sufficient to provide for the increased consumption on the occurrence of potential contingencies.

9.3.2 When an alternate is required, in terms of paragraph 7.2 of this Chapter, to fly to and execute an approach, and a missed approach, at the heliport or landing location to which the flight is planned, and thereafter:

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

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

(c) have an additional amount of fuel, to provide for the increased consumption on the occurrence of potential contingencies.

9.3.3 When no alternate heliport or landing location is available (i.e. the heliport of intended landing is isolated and no alternate is available), to fly to the heliport to which the flight is planned and thereafter for a period as specified by HKCAD.

9.4 In computing the fuel and oil required in paragraph 9.1 of this Chapter, at least the following should be considered:

(a) meteorological conditions forecast;

(b) expected air traffic control routings and traffic delays;

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

(d) the procedures for loss of pressurisation, where applicable, or failure of one engine while en route; and

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

Note - Nothing in this section precludes amendment of a flight plan in flight in order to re-plan the flight to another heliport, provided that the requirements of this section can be complied with from the point where the flight has been re-planned.

10. IN FLIGHT FUEL MANAGEMENT

10.1 An operator should establish policies and procedures, approved by HKCAD, to ensure that in-flight checks and fuel management are performed.

10.2 The pilot-in-command should monitor the amount of usable fuel remaining on board to ensure it is not less than the fuel required to proceed to a landing site where a safe landing can be made with the planned final reserve fuel remaining.

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

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

Note 2. – A precautionary landing site refers to a landing site, other than the site of intended landing, where it is expected that a safe landing can be made prior to the consumption of the planned final reserve fuel.

10.4 The pilot-in-command should declare a situation of fuel emergency by broadcasting MAYDAY MAYDAY MAYDAY FUEL, when the usable fuel estimated to be available upon landing can be made is less than the required final reserve fuel in compliance with paragraph 9 of this chapter.

Note 1. – The planned final reserve fuel refers to the value calculated in paragraph 1 and is the minimum amount of fuel required upon landing at any landing site. The declaration of MAYDAY MAYDAY MAYDAY FUEL INFORMS ATC that all available landing options have been reduced to a specific site and a portion of the final reserve fuel may be consumed prior to landing.

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

Note 3. – The words "MAYDAY FUEL" describe the nature of the distress conditions as required in ICAO Annex 10, Volume II, 5.3.2.1.b)3.

11. OXYGEN SUPPLY

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

Absolute pressure	Metres	Feet
700 hPa	3 000	10 000
620 hPa	4 000	13 000

11.1 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 10 per cent of the passengers for any period in excess of 30 minutes that the pressure in compartments occupied by them will be between 700 hPa and 620 hPa;

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

11.2 A flight to be operated with a pressurized helicopter should not be commenced unless a sufficient quantity of stored breathing oxygen is carried to supply all the crew members and a proportion of the passengers, as is appropriate to the circumstances of the flight being undertaken, in the event of loss of pressurisation, for any period that the atmospheric pressure in any compartment occupied by them would be less than 700 hPa.

12. USE OF OXYGEN

12.1 All flight crew members, when engaged in performing duties essential to the safe operation of a helicopter in flight, should use breathing oxygen continuously whenever the circumstances prevail for which its supply has been required in paragraphs 11.1 or 11.2 of this Chapter.

13. IN-FLIGHT EMERGENCY INSTRUCTION

13.1 In an emergency during flight, the pilot-in-command should ensure that all persons on board are instructed in such emergency action as may be appropriate to the circumstances.

14. WEATHER REPORTING BY PILOTS

14.1 When weather conditions likely to affect the safety of other aircraft are encountered, they should be reported as soon as possible.

15. HAZARDOUS FLIGHT CONDITIONS

15.1 Hazardous flight conditions, other than those associated with meteorological conditions, encountered en route should be reported as soon as possible. The reports so rendered should give such details as may be pertinent to the safety of other aircraft.

16. FITNESS OF FLIGHT CREW MEMBERS

16.1 The pilot-in-command should 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 alcohol or drugs; and

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

17. FLIGHT CREW MEMBERS AT DUTY STATIONS

17.1 Take-off and landing

All flight crew members required to be on flight deck duty should be at their stations.

17.2 En route

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

17.3 Seat belts

All flight crew members should keep their seat belt fastened when at their stations.

17.4 Safety harness

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

Note - Safety harness includes shoulder strap(s) and a seat belt which may be used independently.

18. INSTRUMENT FLIGHT PROCEDURES

18.1 One or more instrument approach procedures should be approved and promulgated by the State in which the heliport is located, to serve each final approach and take-off area or heliport utilized for instrument flight operations.

18.2 All helicopters operated in accordance with IFR should comply with the instrument approach procedures approved by the State in which the heliport is located.

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

Note 2 - Criteria for the construction of instrument flight procedures for the guidance of procedure specialists are provided in PANS-OPS (Doc 8168), Volume II.

19. INSTRUCTION — GENERAL

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

20. REFUELLING WITH PASSENGERS ON BOARD OR ROTORS TURNING

20.1 A helicopter should not be refuelled when passengers are embarking, on board or disembarking or when the rotor is turning unless it is attended by the pilot-in-command or other qualified personnel ready to initiate and direct an evacuation of the helicopter by the most practical and expeditious means available.

20.2 When refuelling with passengers embarking, on board or disembarking, two-way communications should be maintained by helicopter inter-communications system or other suitable means between the ground crew supervising the refuelling and the pilot-in-command or other qualified personnel required by paragraph 19.1 of this Chapter.

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

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

21. OVER-WATER FLIGHTS

21.1 All helicopters on flights over water in a hostile environment should be certificated for ditching. Sea state should be an integral part of ditching information.

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CHAPTER 3 – HELICOPTER PERFORMANCE OPERATING LIMITATIONS

Helicopter should be operated:

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

(b) within the operating limitations prescribed by the certificating authority of the HKCAD; and

(c) within the mass limitations imposed by compliance with the applicable noise certification Standards in Annex 16, Volume I, unless otherwise authorized, in exceptional circumstances for a certain heliport where there is no noise disturbance problem, by the HKCAD.

Placards, listings, instrument markings, or combinations thereof, containing those operating limitations prescribed by the certificating authority of the HKCAD for visual presentation, should be displayed in the helicopter.

Note - The Standards of Annex 8, Part IV, apply to all helicopters intended for the carriage of passengers or cargo or mail in international air navigation.

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CHAPTER 4 – HELICOPTER INSTRUMENTS, EQUIPMENT AND FLIGHT DOCUMENTS

1. ALL HELICOPTERS ON ALL FLIGHTS

1.1 Refer to AN(HK)O or HKCAD Airworthiness Notices for helicopter instruments, equipment and flight documents requirements.

1.2 In addition, the following documents should be carried on board:

(a) any specific approval issued by the HKCAD, where applicable, for the operation(s) to be conducted;

(b) the journey log book for the helicopter.

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

Refer to AN(HK)O or HKCAD Airworthiness Notices for requirements.

3. ALL HELICOPTERS ON FLIGHTS OVER WATER

Refer to AN(HK)O or HKCAD Airworthiness Notices for requirements.

4. ALL HELICOPTERS ON FLIGHTS OVER DESIGNATED LAND AREAS

Refer to AN(HK)O or HKCAD Airworthiness Notices for requirements.

5. ALL HELICOPTERS ON HIGH ALTITUDE FLIGHTS

Refer to AN(HK)O or HKCAD Airworthiness Notices for requirements.

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

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

Note 1 - The various noise certification Standards of Annex 16, Volume I, which are applicable to helicopters are determined according to the date of application for a type certificate, or the date of acceptance

of an application under an equivalent prescribed procedure by the certificating authority. Some helicopters are not required to comply with any noise certification Standard. For details see Annex 16, Volume I, Part II, Chapters 8 and 11.

7. FLIGHT RECORDERS

Refer to AN(HK)O or HKCAD Airworthiness Notices for requirements.

Note: Guidance on the use and retention of recordings are contained in CAD 739 (Flight Data Monitoring – A guide to Implementation).

8. EMERGENCY LOCATOR TRANSMITTER (ELT)

Refer to AN(HK)O or HKCAD Airworthiness Notices for requirements.

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

Refer to AN(HK)O or HKCAD Airworthiness Notices for requirements.

10. MICROPHONES

Refer to AN(HK)O or HKCAD Airworthiness Notices for requirements.

11. HELICOPTERS EQUIPPED WITH AUTOMATIC LANDING SYSTEMS, HUD OR EQUIVALENT DISPLAYS, EVS, SVS OR CVS

11.1 In establishing operational criteria for the use of automatic landing systems, a HUD or equivalent displays, EVS, SVS or CVS, operator/owner should demonstrate to the HKCAD that:

(a) the equipment meets the appropriate airworthiness certification requirements;

(b) the operator/owner has carried out a safety risk assessment associated with the operations supported by the automatic landing systems, a HUD or equivalent displays, EVS, SVS or CVS;

(c) the operator/owner has established and documented the procedures for the use of, and training requirements for automatic landing systems, a HUD or equivalent displays, EVS, SVS or CVS.

Note 1: Guidance on safety risk assessments is contained in the SafetyManagement Manual (SMM) (Doc 9859).

Note 2: Guidance on establishing operational criteria is contained in AttachmentI of ICAO Annex 6, Part III and the Manual of All-Weather Operations (Doc 9365).

12. HELICOPTER COMMUNICATION, NAVIGATION AND SURVEILLANCE EQUIPMENT

12.1 Communication equipment

12.1.1 Refer to AN(HK)O or HKCAD Airworthiness Notices for the requirements of helicopter communication equipment.

Note: The radio communication equipment required in accordance with paragraph 12.1.1 should provide for communication on the aeronautical emergency frequency 121.5 MHz.

12.1.2 For operations where communication equipment is required to meet an RCP specification for performance-based communication (PBC), a helicopter should, in addition to the requirements specified in paragraph 12.1.1:

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

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

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

12.1.3 For operations where communication is required to meet an Required Communication Performance (RCP) specification for PBC, the following should be established and documented by the operator/owner:

(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.

Note: Information on the performance-based communication and surveillance (PBCS) concept and guidance material on its implementation are contained in the Performance-based Communication and Surveillance (PBCS) Manual (Doc9869), which is expected to be published by ICAO in November 2016.

12.1.4 In respect of those helicopters mentioned in paragraph 12.1.2, the operator/owner should ensure adequate provisions exist for:

(a) submitting the reports to the HKCAD regarding observed communication performance issued by monitoring programmes established in accordance with ICAO Annex 11, Chapter 3; and

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

12.2 Navigation equipment

12.2.1 Refer to AN(HK)O or HKCAD Airworthiness Notices for the requirements of helicopter navigation equipment.

12.2.2 For operations where a navigation specification for performance-based navigation (PBN) has been prescribed, a helicopter should, in addition to the requirements specified in paragraph 12.2.1:

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

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

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

Note: Further guidance on helicopter documentation is contained in the ICAO Performance-based Navigation (PBN) Manual (Doc 9613).

12.2.3 For operations where a navigation specification for PBN has been prescribed, the following should be established and documented by the operator/owner:

(a) normal and abnormal procedures including contingency procedures;

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

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

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

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

Note 2: Guidance on specific approvals for PBN authorisation required (AR) navigation specifications is also contained in the ICAO Performance-based Navigation (PBN) Operational Approval Manual (Doc 9997).

Note 3: Electronic navigation data management is an integral part of normal and abnormal procedures.

12.3 Surveillance equipment

12.3.1 Refer to AN(HK)O or HKCAD Airworthiness Notices for the requirements of helicopter surveillance equipment.

12.3.2 A helicopter, where applicable, should be provided with surveillance equipment which will enable it to operate in accordance with the requirements of air traffic services.

12.3.3 For operations where surveillance equipment is required to meet an RSP specification for performance-based surveillance (PBS), a helicopter should, in addition to the requirements specified in paragraph 12.3.1 and 12.3.2:

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

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

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

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

Note 2: Information on RSP specifications for performance-based surveillance is contained in the Performance-based Communication and Surveillance (PBCS) Manual (Doc 9869), which is expected to be published by ICAO in November 2016.

12.3.4 In establishing criteria for operations where an RSP specification for PBS has been prescribed, the following should be established by the operator/owner:

(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.

12.3.5 In respect of those helicopters mentioned in paragraph 12.3.3, the operator/owner should ensure adequate provisions exist for:

(a) submitting the reports to the CAD regarding observed surveillance performance issued by monitoring programmes established in accordance with ICAO Annex 11, Chapter 3; and

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

CHAPTER 5 HELICOPTER FLIGHT CREW

1. QUALIFICATIONS

1.1 The pilot-in-command should ensure that the licences of each flight crew member have been issued or rendered valid by the HKCAD, and are properly rated and of current validity, and should be satisfied that flight crew members have maintained competence.

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

2. COMPOSITION OF THE FLIGHT CREW

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

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ATTACHMENT 1 - HELICOPTER PERFORMANCE AND OPERATING LIMITATIONS

1. DEFINITIONS

Category A. With respect to helicopters, means a multi-engined helicopter designed with engine and system isolation features specified in Annex 8, Part IVB, and capable of operations using take-off and landing data scheduled under a critical engine failure concept which assures adequate designated surface area and adequate performance capability for continued safe flight or safe rejected take-off.

Category B. With respect to helicopters, means a single engine or multi-engined helicopter which does not meet Category A standards. Category B helicopters have no guaranteed capability to continue safe flight in the event of an engine failure, and a forced landing is assumed.

2. GENERAL

2.1 Helicopters operating in performance Classes 1 and 2 should be certificated in Category A.

2.2 Helicopters operating in performance Class 3 should be certificated in either Category A or Category B (or equivalent).

2.3 Except as permitted by the appropriate authority:

2.3.1 Take-off or landing from/to heliports in a congested hostile environment should only be conducted in performance Class 1.

2.3.2 Operations in performance Class 2 should only be conducted with a safe forced landing capability during take-off and landing.

2.3.3 Operations in performance Class 3 should only be conducted in a non-hostile environment.

2.4 In order to permit variations from paragraphs 2.3.1, 2.3.2 and 2.3.3 of this Chapter, HKCAD will undertake a risk assessment when required, considering factors such as:

(a) the type of operation and the circumstances of the flight;

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

(c) the probability of a critical engine failure and the consequence of such an event;

(d) the procedures to maintain the reliability of the engine(s);

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

(f) installation and utilisation of a usage monitoring system.

Note 1 - It is recognized that there may be instances in which a safe forced landing may not be possible due to environmental or other factors. Operator should apply risk management and permit variations to specific operations such as operations to helidecks where exposure to an engine failure is present without a safe forced landing. When operations without suitable areas for safe forced landings are being considered, all relevant factors should be evaluated. These may include the likelihood of the event, the possible consequences, any mitigating measures as well as the potential benefits and costs of the operation. The specific process for conducting this evaluation is to be decided by the HKCAD. In any case, appropriate consideration of a safe forced landing should be either implicit or explicit to a performance code's construction. Accident history and other relevant safety data and analysis are crucial to the development of operational regulations in this area. The resulting requirements may take many forms, such as designation of approved operational areas, routes of flight and obstacle clearance requirements.

Note 2 - If there are routes with access to suitable forced landing areas, these should be used for flights into and out of the congested area. Where no such routes exist, evaluation of the operation could include consideration of mitigating factors such as the reliability of the propulsion system in the short periods when flight over a suitable forced landing area is not possible.

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PART FOUR – CONTINUED AIRWORTHINESS SUPPORT ARRANGEMENT

CHAPTER 1 - GENERAL

1. PURPOSE

1.1 This Part Four details the requirements governing the continued airworthiness support arrangement of aircraft stipulated in Parts One, Two and Three of this Manual.

1.2 The requirements of this Part Four cover the grant and renewal of continued airworthiness inspection programmes and management approvals.

1.3 These requirements are not in themselves Law. Failure to comply may not constitute an offence. However, the requirements reproduce many of the provisions of the AN(HK)O. Therefore, failure to comply with these requirements may:

(a) constitute a breach of the AN(HK)O; and

(b) result in proceedings for breaches of the AN(HK)O; or

(c) result in the refusal of an application for renewal of an approval; or

(d) result in action to suspend or revoke an approval.

2. DEFINITIONS

Definitions, in the context of this Part shall have the meanings listed in AN(HK)O Article 98 and Hong Kong Airworthiness Notice (AN) No. 1A.

3. AIRCRAFT EQUIPMENT

Aircraft equipment requirements for the issue of Certificate of Airworthiness and grant of operational approvals are published in Schedule 5 and 6 of the AN(HK)O and AN No. 102 Series.

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CHAPTER 2 – CONTINUED AIRWORTHINESS MANAGEMENT

1. MANAGEMENT PERSONNEL

The owner or operator, should appoint a person acceptable to the HKCAD and known as the technical liaison officer who will ensure that appropriate arrangements for continued airworthiness management, through a maintenance contract or agreement between the owner or operator and an appropriately approved organisation, required by this Part Four are in place.

2. MANAGEMENT RESPONSIBILITIES

2.1 The personnel identified in paragraph 1 are responsible for ensuring that the certificate of airworthiness continues to remain valid by suitable arrangements which also ensure that:

(a) the aircraft, including its airframe, engines(s), propellers, appliances, emergency equipment and operational equipment, is maintained in an airworthy condition; and

(b) all scheduled maintenance is performed in accordance with a maintenance programme approved by the HKCAD; and

(c) appropriate contracted maintenance arrangements are made acceptable to the HKCAD; and

(d) only approved person certifies maintenance on the aircraft; and

(e) any defects and unserviceabilities are rectified or deferred in accordance with approved procedures prior to flight; and

(i) MEL is adhere to; and

(ii) repetitive defects are identified and controlled in accordance with procedures approved in the maintenance management exposition; and

(iii) procedures are in place for the notification of any MEL/CDL limitations to the operating crew; and

(iv) procedures are established for the subsequent control of required rectification intervals; and

(f) applicable mandatory continued airworthiness requirements are complied with within the prescribed period; and

(g) there are suitable arrangements for the receipt of all relevant continued airworthiness information published by the Type Design Organisation for the aircraft and any applicable accomplished major design change; and

(h) any required technical and reliability assessments are undertaken and reports of aircraft continued airworthiness status are made by arrangements acceptable to the HKCAD; and

(i) applicable continued airworthiness data is reviewed for the determination of any required actions to be taken and records of such reviews are maintained; and

(j) repairs are carried out in accordance with HKAR-21 Subpart M that, wherever possible, do not impose further continued airworthiness requirements; and

(k) design changes are carried out in accordance with HKAR-21 Subpart D and any continued airworthiness requirements arising from them are incorporated in the aircraft maintenance programme; and

(l) suitable arrangements, acceptable to the HKCAD, are made for the regular development of the maintenance programme to ensure effective continued airworthiness of the applicable aircraft; and

(m) any applicable continued airworthiness data is made available to those involved in the maintenance of the aircraft; and

(n) procedures prescribed in any applicable maintenance management exposition are complied with; and

(o) any required technical dispatch procedures for special operations approved by the HKCAD are complied with; and

(p) for any aircraft having systems utilising Field Loadable Software and Database Field Loadable Data, controlling procedures acceptable to the HKCAD are in place to ensure that:

(i) Field Loadable Software uploads are accomplished in accordance with HK AN No. 43; and

(ii) Database Field Loadable Data is controlled and transferred in accordance with the equipment manufacturer's instructions; and

(q) continued airworthiness records are maintained in accordance with Chapter 4 of this Part; and

(r) occurrence reporting is accomplished to the requirements of CAD 382 and appropriate investigations are undertaken to safeguard the aircraft and that of any other, records of such investigations and any actions taken should be reported; and

(s) where applicable, there are suitable procedures acceptable to the HKCAD for the control of aircraft, product and component leasing; and

(t) up-to-date mass and balance records are maintained that reflect the approved configuration of the aircraft; and

(u) arrangements are made for technical liaison with applicable type design organisations, operators and maintenance organisations to address any airworthiness issues such as; faults, malfunctions, defects, any required inspection task reporting and inaccurate/misleading airworthiness data; and

(v) liaison meetings are held in compliance with any applicable reliability monitoring programme requirement.

3. GENERAL MAINTENANCE ARRANGEMENTS

3.1 Arrangements for maintenance of aircraft types specified in paragraph 14 of HK AN No. 10 should be established by a suitable contract with an appropriately approved HKAR-145 maintenance organisation.

3.2 For the annual maintenance check or that specified in the approved maintenance programme for aircraft types other than that specified in paragraph 3.1 of this Chapter should be undertaken by holders of Hong Kong Aircraft Maintenance Licences with Type Rating certification privilege valid for the particular aircraft types.

3.3 The maintenance contract should specify:

(a) a clear description of the work required of the maintenance organisation or person that takes account of human factors; and

(b) that a safety management system should be in place; and

(c) the applicable maintenance management exposition including any operator specific maintenance control procedures that are to be followed; and

(d) the owner/operator contact information; and

(e) details of any supplied maintenance data including its revision status and applicability.

3.4 Persons signing a Certificate of Release to Service should meet the requirements specified in HKAR-1 Sub-section 1.6-2.

3.5 Aircraft to be operated under a Permit to Fly granted by the HKCAD to the requirements specified in HKAR-1 Sub-section 1.3-7 should have maintenance arrangements acceptable to the HKCAD.

4. MAINTENANCE MANAGEMENT EXPOSITION

4.1 The maintenance management exposition is subject to the acceptance by the HKCAD. It should be in the English language and the content should be representative of the organisation and address compliance with the applicable requirements of this Part.

4.2 The maintenance management exposition should contain details of the accountable manager and a corporate commitment to compliance with applicable HKARs.

4.3 The maintenance management exposition and subsequent amendments should be accepted by the HKCAD and made available to personnel at all locations where access to that material may be required either in hard copy or electronic format in a manner acceptable to the HKCAD.

4.4 The maintenance management exposition should take account of human factors, a safety management system and contain details of continuation training for all personnel involved in airworthiness management.

4.5 The maintenance management exposition should contain the necessary procedures for applicable continued airworthiness management functions prescribed in Chapters 2 and 3 of this Part to ensure the continued airworthiness of the managed aircraft and ensure the continued validity of the Certificates of Airworthiness.

4.6 The organisation should establish a safety and quality policy for the organisation to be included in the maintenance management exposition that should detail:

(a) a quality system that includes independent audits to monitor the adequacy of procedures and to ensure that the organisation functional responsibilities are discharged effectively; and

(b) a quality feedback reporting system to the person or group of persons specified in paragraph 4.10 (b) of this Chapter and ultimately to the accountable manager; and

(c) procedures to ensure that proper and timely corrective action is taken in response to reports resulting from the independent audits.

4.7 In small organisations of fewer than 5 people the independent audit part of the quality system may be contracted to another approved organisation or a person with appropriate technical knowledge and proven satisfactory audit experience in a manner acceptable to the HKCAD.

4.8 Procedures should be established for a regular review of the maintenance management exposition to ensure that it remains effective in maintaining aircraft in an airworthy condition.

4.9 All amendments should be made in a timely manner and the amendment status of each document should be readily identifiable by personnel. Obsolete material should be removed promptly from all points of issue or use, and controls should be in place to preclude the use by personnel of superseded material.

4.10 The maintenance management exposition should contain details of:

(a) the available facilities; and

(b) personnel including their duties and responsibilities; and

(c) any computer based systems and data to be utilised for the purpose of continued airworthiness management.

4.11 The maintenance management exposition should contain details of any subcontracted activities.

4.12 The capability and scope of the approval should be recorded in the maintenance management exposition.

4.13 The maintenance management exposition should contain a list of definitions and acronyms used.

CHAPTER 3 – MAINTENANCE REQUIREMENTS

1. MAINTENANCE PROGRAMME

1.1 Aircraft granted a certificate of airworthiness to the requirements of HKAR-1 Sub-section 1.3-2 should be maintained in accordance with a maintenance programme approved by the HKCAD.

Note: Details of maintenance programme requirements are specified in the HKAR-1 Sub-section 1.6-2.

1.2 The maintenance programme and any amendments should require approval by the HKCAD for each aircraft, and should include details of the maintenance of the aircraft, engines, propellers, rotors, appliances and emergency equipment items.

1.3 The maintenance programme should reference the required inspection standards, practices and procedures that should be at least equivalent to the Type Certificate holder's scheduled maintenance requirements.

1.4 Any schedule of inspections/tests required by any approved programme amendment should be introduced in a controlled manner to ensure the continued airworthiness of the aircraft.

1.5 Consideration should be given to human performance within the maintenance programme including the format of the maintenance programme document, maintenance task breakdown and combined maintenance tasking, particularly safety critical tasks which should be identified in the maintenance programme.

1.6 The maintenance programme should readily identify any certification inspection tasks and other significant continued airworthiness inspection tasks that are the subject of specific control and mandated by the applicable State of Design, such as but not limited to:

(a) Supplemental Structural Inspection Document;

(b) Fuel Tank Safety Inspections;

(c) Ageing Aircraft;

(d) Widespread Fatigue Damage;

(e) Electrical Wiring Interconnection Systems (EWIS).

1.7 Each maintenance programme approval holder should make any revisions to the maintenance programme as required by the HKCAD and any applicable mandatory amendments promulgated by the Type Certificate holder authority or its NAA to satisfy the continuing airworthiness requirements of the aircraft.

1.8 The maintenance programme including any amendments should be produced in the English language, be readily available and should contain within it:

(a) an explanation of the programme, including the continuity of inspection responsibility, procedures for making any required reports and technical reference material; and

(b) instructions and procedures for the implementation of inspection tasks for the particular aircraft type, taking account of the aircraft modification status and any repairs that have associated instructions for continued airworthiness; and

(c) an inspection schedule for performing the inspections required by the programme expressed in terms of the total time in service, cycles, calendar time, number of system operations, or any combination of these; and

(d) for a progressive inspection programme, an inspection schedule that provides for the complete inspection of the aircraft within each 12 month period or is consistent with:

(i) the manufacturer's recommendations; and

(ii) the operator's service experience; and

(iii) the type of operation in which the aircraft is engaged; and

(iv) the utilisation of the aircraft in terms of hours and cycles or a combination thereof

(e) instructions taking account of detailed technical justification, for altering and gaining approval for a change of inspection intervals or a maintenance process because of service experience; and

(f) instructions for varying an inspection interval under exceptional circumstances taking account of overriding mandatory requirements and maintenance programme inspection requirements referred to in paragraphs 1.5 and 1.6 of this Chapter; and

(g) sample inspection forms, reports and instructions for their use; and

(h) procedures for maintenance trend analysis if the programme utilises condition monitored maintenance or information derived from health and usage monitoring systems; and

(i) inspection requirements required for approved special operations; and

(j) instructions for continued airworthiness including verification of data acquisition of any installed flight recorder systems required by the applicable State of Design; and

(k) a list of definitions and acronyms used.

2. MAINTENANCE PROGRAMME APPROVAL

2.1 Each applicant for the approval of a maintenance programme should apply to the HKCAD for approval.

2.2 The application for approval of the maintenance programme should be referred to HKAR-1 Sub-sections 1.6-2 and 1.7-5.

Note: The following information should also be included:

(a) the name and address of the lessee of an aircraft registered in Hong Kong, if applicable; and

(b) the maintenance status of the aircraft prior to the commencement of the programme; and

(c) the means of introducing the programme; and

(d) technical justification relating to the anticipated utilisation of the aircraft, inspection intervals and procedures for inspection task management; and

(e) copies of any other supporting documents, such as fuel tank safety inspection programmes.

3. CONDITION MONITORED AND RELIABILITY PROGRAMMES

3.1 Where the manufacturer of aircraft, engines and propellers prescribe condition monitoring, reliability programmes or health and usage monitoring systems these should form part of the maintenance programme approved by the HKCAD under paragraph 2 of this Chapter.

3.2 Appropriate procedures acceptable to the HKCAD should be established for any applicable condition monitoring or reliability or health and usage monitoring systems referred to in paragraph 3.1 of this Chapter.

Note: Details are specified in CAD 418 'Condition Monitored Maintenance: An Explanatory Handbook' and Appendix No. 1 to HKAR-1 Sub-section 1.6-2.

4. AIRWORTHINESS DIRECTIVES APPLICABILITY AND COMPLIANCE

4.1 Except as provided for in paragraph 4.2 of this Chapter, the airworthiness directives applicable under this Part are those airworthiness directives or equivalent mandatory continued airworthiness requirements:

(a) prescribed for that aircraft or product by the State of Design for type certification; and

(b) any prescribed by the State of Design for applicable approved design change.

4.2 Compliance with alternative or additional airworthiness directives may be required as a condition of issue or continuity of the Type Certificate.

Note: Details are specified in HKAR-1 Sub-section 1.6-6 and AN No. 36.

CHAPTER 4 – AIRCRAFT RECORDS

1. MAINTENANCE AND CONTINUED AIRWORTHINESS RECORDS

1.1 The owner or operator should make provision for the retention of aircraft, engine and propeller log books recording at least the following:

(a) maintenance records; and

(b) airworthiness records of compliance with airworthiness directives and scheduled maintenance requirements; and

(c) records of modifications and repairs; and

(d) life component records.

1.2 Maintenance records should be of sufficient detail to establish the full content of the maintenance activity undertaken and should include all relevant supporting information, such as component replacement service life records.

1.3 Records should be of sufficient detail to demonstrate the airworthiness status of the aircraft at all times and should include:

(a) a description of maintenance tasks including references to the applicable approved technical data; and

(b) the date of completion of all scheduled maintenance tasks and reference to the approved maintenance programme; and

(c) the signature, and authorisation reference of the person certifying the aircraft for return to service; and

(d) the total time in service by the specified time control basis of the airframe, each engine, each propeller, and each rotor and installed equipment; and

(e) the current status of lifed parts/components of each airframe, engine, propeller, rotor and appliance with referenced to the specified time interval basis required by paragraph 1.8 (c) of Chapter 3 in this Part; and

(f) the time since last overhaul of all items installed on the aircraft which are required to be overhauled on a specified time basis; and

(g) the current maintenance status of the aircraft, including the time since the last inspection required by the maintenance programme under which the aircraft is maintained; and

(h) the current status of each applicable airworthiness directive including:

(i) the airworthiness directive number; and

(ii) the revision date; and

(iii) the means of compliance; and

(iv) if the airworthiness directive involves recurring action, the time and date when the next action is required; and

(i) a list of all design changes and repairs to each airframe, engine, propeller, rotor and appliance including substantiation data required by HKAR-21; and

(j) a record of all airframe damage that shows each damage site with a reference to a certified assessment to approved data supporting continued aircraft operation; and

(k) a record of any defects or maintenance activities requiring rectification action to restore the aircraft to an airworthy condition.

1.4 The records should be kept in hard copy form or in electronic coded form provided that this form allows for the preservation and retrieval of information in a manner acceptable to the HKCAD.

1.5 Any additional worksheets, documents, technical logs or other documentation associated with the maintenance of the aircraft should be referenced in the relevant log books and will become part of the maintenance records for retention of records purposes.

2. RETENTION OF RECORDS

2.1 The owner or operator should retain maintenance and continued airworthiness records for at least the following specified periods:

(a) airworthiness records of aircraft, engines and propeller should be retained for 24 months following permanent withdrawal from service; and

(b) records supporting a Certificate of Release to Service including technical log sector record pages, if applicable, should be retained for 24 months following the issue of the Certificate of Release to Service.

2.2 The owner or operator required by paragraph 4.1 of this Chapter to provide a Technical Log, should ensure that the pilot in command enters the following details in the Technical Log:

(a) the times when the aircraft took off and landed; and

(b) particulars of any defect which is known to him and which affects the airworthiness or safe operation of the aircraft, or if no such defect is known to him, an entry to that effect; and

(c) such other particulars in respect of the airworthiness or operation of the aircraft as the HKCAD may require.

3. TRANSFER OF MAINTENANCE RECORDS

3.1 The holder of a Hong Kong Certificate of Registration, should at the time of transfer of registration, transfer all relevant maintenance records and records of continued airworthiness to the new owner or operator.

3.2 In the event of a temporary change of operator, the relevant maintenance records and records of continued airworthiness should be made available to the new operator.

4. TECHNICAL LOG

4.1 A technical log should be kept in respect of an aircraft registered in Hong Kong being an aircraft in respect of which a certificate of airworthiness in either the transport or the aerial work category is in force or in respect of any other aircraft when the HKCAD so requires.

4.2 The content of the Technical Log should meet the requirement Article 10 of the AN(HK)O.

Note: Details are specified in HKAR-1 Sub-section 1.7-8.

5. MASS AND BALANCE

5.1 Aircraft above 5700 kg MTWA should be re-weighed within two years after the date the Certificate of Airworthiness is first issued in Hong Kong, and subsequent check weighing should be made at intervals not exceeding five years, and at such times as the HKCAD may require.

Aircraft below 5,700 kg MTWA should be re-weighed at such times as the HKCAD may require.

Note: Detailed requirements are specified in HKAR-1 Sub-section 1.6-4.

5.2 Where an aircraft is operated in more than one configuration, a separate mass and balance report should be provided for each configuration and should contain:

(a) details of the differences from the basic aircraft configuration; and

(b) the empty mass and centre of gravity for the configuration; and

(c) the approved modification details supporting the configuration.

5.3 All mass and balance reports should be certified by an authorised person responsible for compiling the report.

5.4 Alternative configurations and changes made to the aircraft empty mass should be certified with an appropriate maintenance release recording:

(a) where applicable the specific configuration; and

(b) details of the approved modification; and

(c) the amendment made to the aircraft's empty mass and balance report.