ประกาศสำนักงานการบินพลเรือนแห่งประเทศไทย

เรื่อง มาตรฐานการปฏิบัติการบินของผู้ดำเนินการเดินอากาศ
(Thailand Civil Aviation Regulation - Air Operations
(TCAR OPS)) พ.ศ. ๒๕๖๗

ตามที่ได้ออกข้อบังคับของสำนักงานการบินพลเรือนแห่งประเทศไทย ฉบับที่ ๒๖ ว่าด้วยใบรับรองผู้ดำเนินการเดินอากาศ (Air Operator Certificate) และข้อบังคับของสำนักงานการบินพลเรือนแห่งประเทศไทย ฉบับที่ ๒๗ ว่าด้วยการปฏิบัติการของผู้ได้รับใบรับรองผู้ดำเนินการเดินอากาศ และประกาศสำนักงานการบินพลเรือนแห่งประเทศไทย เรื่อง มาตรฐานการปฏิบัติการบินของผู้ดำเนินการเดินอากาศ (Thailand Civil Aviation Regulation - Air Operations (TCAR OPS)) พ.ศ. ๒๕๖๖ ซึ่งจำเป็นต้องมีการปรับปรุงหลักเกณฑ์มาตรฐานปฏิบัติการบินของผู้ดำเนินการเดินอากาศให้เป็นปัจจุบันเพื่อให้สอดคล้องตามภาคผนวก ๖ และบทแก้ไขเพิ่มเติมภาคผนวก ๖ แห่งอนุสัญญาว่าด้วยการบินพลเรือนระหว่างประเทศ ค.ศ. ๑๙๔๔ และ Commission Regulation (EU) 965/2012 Part - Definition (Part - DEF) Part - Organisation Requirements for Air Operations (Part - ORO) Part - Commercial Air Transport Operations (Part - CAT) และ Part - Specific Approvals (Part - SPA) รวมถึงเพิ่มเติมมาตรฐานและแนวทางปฏิบัติสำหรับพนักงานต้อนรับในเครื่องบินและเฮลิคอปเตอร์ของผู้ดำเนินการเดินอากาศตาม Part - Cabin Crew (Part - CC) อาศัยอำนาจตามความในข้อ ๗ ของข้อบังคับของสำนักงานการบินพลเรือนแห่งประเทศไทย ฉบับที่ ๒๗ ว่าด้วยการปฏิบัติการของผู้ได้รับใบรับรองผู้ดำเนินการเดินอากาศ ผู้อำนวยการสำนักงานการบินพลเรือนแห่งประเทศไทย จึงออกประกาศกำหนดหลักเกณฑ์ ข้อกำหนด เงื่อนไข และสิทธิที่ได้รับเพื่อให้ผู้ได้รับใบรับรองผู้ดำเนินการเดินอากาศปฏิบัติการบินอย่างปลอดภัยและปฏิบัติการในเรื่องอื่น ๆ ที่เกี่ยวข้องไว้ดังต่อไปนี้

ข้อ ๑ ประกาศนี้เรียกว่า “ประกาศสำนักงานการบินพลเรือนแห่งประเทศไทย เรื่อง มาตรฐานการปฏิบัติการบินของผู้ดำเนินการเดินอากาศ (Thailand Civil Aviation Regulation - Air Operations (TCAR OPS)) พ.ศ. ๒๕๖๗”

ข้อ ๒ ประกาศนี้ให้ใช้บังคับตั้งแต่วันที่ ๒๐ ธันวาคม พ.ศ. ๒๕๖๗ เป็นต้นไป

ข้อ ๓ ให้ยกเลิกประกาศสำนักงานการบินพลเรือนแห่งประเทศไทย เรื่อง มาตรฐานการปฏิบัติการบินของผู้ดำเนินการเดินอากาศ (Thailand Civil Aviation Regulation - Air Operations (TCAR OPS)) พ.ศ. ๒๕๖๖ ประกาศ ณ วันที่ ๘ ธันวาคม พ.ศ. ๒๕๖๖

ข้อ ๔ มาตรฐานการปฏิบัติการบินของผู้ดำเนินการเดินอากาศที่กำหนดไว้ในประกาศนี้ให้ใช้บังคับกับผู้ที่ยื่นขอและได้รับใบรับรองผู้ดำเนินการเดินอากาศหลังจากวันที่ ๓ ธันวาคม ๒๕๖๖ และผู้ดำเนินการเดินอากาศที่ได้รับใบรับรองผู้ดำเนินการเดินอากาศใหม่ตามประกาศสำนักงานการบินพลเรือน

แห่งประเทศไทย เรื่อง การรับรองผู้ดำเนินการเดินอากาศใหม่ (Air Operator Certification Re - Certification) พ.ศ. ๒๕๖๖ ประกาศ ณ วันที่ ๔ ธันวาคม พ.ศ. ๒๕๖๖ และที่แก้ไขเพิ่มเติม

ข้อ ๕ ผู้ได้รับใบรับรองผู้ดำเนินการเดินอากาศต้องปฏิบัติการบินอย่างปลอดภัยตามหลักเกณฑ์ข้อกำหนด เงื่อนไข และสิทธิที่ได้รับในเรื่องระบบบริหารจัดการ (Management System) การปฏิบัติการบินและการรับรองการปฏิบัติการบิน (Flight and Ground Operating Procedures and Specific Approval) ข้อจำกัดเวลาทำการบิน เวลาปฏิบัติหน้าที่และเวลาพักผ่อน (Flight and Duty Time Limitations and Rest Requirements) ผู้ประจำหน้าที่ในอากาศ (Flight Crew) พนักงานอำนวยการบิน (Flight Operations Officer/Flight Dispatcher) และสมาชิกลูกเรือผู้ปฏิบัติหน้าที่ทางเทคนิค (Technical Crew) พนักงานต้อนรับในเครื่องบินหรือเฮลิคอปเตอร์ (Cabin Crew) การรักษาความปลอดภัยในเครื่องบินหรือเฮลิคอปเตอร์ (Security) คู่มือ สมุดปูม และบันทึก (Manuals Logs and Records) เครื่องวัด อุปกรณ์ และเอกสารการบินประจำเครื่องบินหรือเฮลิคอปเตอร์ (Instruments Data Equipment) สมรรถนะและขีดจำกัดของเครื่องบินหรือเฮลิคอปเตอร์ (Performance and Operating Limitations) การคงความต่อเนื่องของความสมควรเดินอากาศสำหรับเครื่องบินหรือเฮลิคอปเตอร์ (Continue Airworthiness) และเรื่องอื่นที่เกี่ยวข้องกับความปลอดภัยในการปฏิบัติการบินและการปฏิบัติการในเรื่องอื่น ๆ ตามมาตรฐานที่กำหนดไว้ ดังต่อไปนี้

(๑) Cover Regulation to TCAR OPS and TCAR OPS Part - DEF, ORO, CAT, SPA and CC Issue 02 Revision 00 Date 20 December 2024 แนบท้ายประกาศนี้ และที่แก้ไขเพิ่มเติม

(๒) Thailand Civil Aviation Regulation - Air Operations Part Definition of Terms Used in TCAR OPS (TCAR OPS Part - DEF) Issue 02 Revision 00 Date 20 December 2024 แนบท้ายประกาศนี้ และที่แก้ไขเพิ่มเติม

(๓) Thailand Civil Aviation Regulation - Air Operations Part Organisation Requirements for Air Operations (TCAR OPS Part - ORO) Issue 02 Revision 00 Date 20 December 2024 แนบท้ายประกาศนี้ และที่แก้ไขเพิ่มเติม

(๔) Thailand Civil Aviation Regulation - Air Operations Part Commercial Air Transport (TCAR OPS Part - CAT) Issue 02 Revision 00 Date 20 December 2024 แนบท้ายประกาศนี้ และที่แก้ไขเพิ่มเติม

(๕) Thailand Civil Aviation Regulation - Air Operations Part Operations Requiring Specific Approvals (TCAR OPS Part - SPA) Issue 02 Revision 00 Date 20 December 2024 แนบท้ายประกาศนี้ และที่แก้ไขเพิ่มเติม

(๖) Thailand Civil Aviation Regulation - Air Operations Part Cabin Crew (TCAR OPS Part - CC) Issue 01 Revision 00 Date 20 December 2024 แนบท้ายประกาศนี้ และที่แก้ไขเพิ่มเติม

ข้อ ๖ บรรดาคู่มือหรือเอกสารอื่นใดที่ผู้อำนวยการสำนักงานการบินพลเรือนแห่งประเทศไทยออกให้หรือได้ให้การรับรอง เห็นชอบ หรือยอมรับแล้วภายใต้ประกาศสำนักงานการบินพลเรือนแห่งประเทศไทย เรื่อง มาตรฐานการปฏิบัติการบินของผู้ดำเนินการเดินอากาศ (Thailand Civil Aviation Regulation - Air Operations (TCAR OPS)) พ.ศ. ๒๕๖๖ ให้มีผลใช้ได้ต่อไป โดยผู้ได้รับใบรับรองผู้ดำเนินการเดินอากาศจะต้องดำเนินการแก้ไขปรับปรุงคู่มือหรือเอกสารอื่นนั้นให้เป็นไปตาม Thailand Civil Aviation Regulation - Air Operations Part - DEF, Part - ORO, Part - CAT, Part - SPA Issue 02 Revision 00 Date 20 December 2024 แนบท้ายประกาศนี้ และเสนอต่อผู้อำนวยการสำนักงานการบินพลเรือนแห่งประเทศไทยเพื่อขอการรับรอง เห็นชอบ หรือยอมรับใหม่ ภายในหนึ่งร้อยแปดสิบวันนับแต่วันที่ประกาศนี้มีผลใช้บังคับ ทั้งนี้ หากไม่สามารถดำเนินการให้แล้วเสร็จภายในระยะเวลาที่กำหนด ให้การรับรอง เห็นชอบ หรือยอมรับนั้นเป็นอันใช้ไม่ได้

ประกาศ ณ วันที่ ๒๐ ธันวาคม พ.ศ. ๒๕๖๗
สุทธิพงษ์ คงพูล
ผู้อำนวยการสำนักงานการบินพลเรือนแห่งประเทศไทย

สำนักงานการบินพลเรือนแห่งประเทศไทย
The Civil Aviation Authority of Thailand

Cover Regulation to TCAR OPS and TCAR OPS Part - DEF, ORO, CAT, SPA and CC

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Approved By

Suttipong Kongpool

Director General

The Civil Aviation Authority of Thailand

THAILAND CIVIL AVIATION REGULATION (TCAR)

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FOREWORD

According to Section 15/7 and Section 15/8 of Air Navigation Act, (14th Amendment) B.E.2562, whereas the Civil Aviation Authority of Thailand (CAAT) shall have the duties and responsibilities for regulating and oversight on the safety, security and facilitation of civil aviation in Thailand. In regulating and oversight civil aviation to promote sustainable development on civil aviation industry, The CAAT shall also proceed to comply with the Convention on International Civil Aviation, ICAO Annexes and International Standards.

Having regard to Section 41/112, 41/115 and 41/117 of the Air Navigation Act (14th Amendment) B.E.2562 prescribes that the Director General shall have power to issue regulations to prescribing the criterial for granting the Air Operator Certificate in order to certify that the person applying for the said certificate has the ability to perform Air Operation safely and effectively and the Director General will issue an Air Operator Certificate to those intending to operate that has proven to perform a safety management standard for commercial air transportation which not lower than the minimum standard specified in the regulation issued by the Director. In this regard, the application, issuance, revision and renewal of the Air Operator Certificate, as well as the form of the Certificate and its Specific Approval shall be in accordance with the regulation issued by the Director General and the holder of the Air Operator Certificate shall conduct its operation safely and perform other duties pursuant to the criteria, requirements, conditions and privileges granted in accordance with the regulation issued by the Director General. The Director General hereby issued the regulation concerning the operations of aircraft as detailed in the Regulation of the Civil Aviation Authority of Thailand No. 26 on the Air Operator Certificate and the Regulation of the Civil Aviation Authority of Thailand No. 27 on the Operation of Air Operator Certificate holder.

By the virtue of Clause 7 of the Regulation of the Civil Aviation Authority of Thailand No. 27 on the Operation of Air Operator Certificate holder, the Director General issued Notification of the Civil Aviation Authority of Thailand Re: Thailand Civil Aviation Regulation – Air Operation (TCAR OPS) B.E. 2566 to prescribe the essential requirements for air operations laid down in this regulation, the CAAT issued detail requirements contained in this " TCAR OPS Air Operations Regulation" as well as in TCAR OPS Parts including Cover Regulation to TCAR OPS and TCAR OPS Part DEF, ORO, CAT, SPA and CC.

This Cover regulation to TCAR OPS and TCAR OPS Parts contains an Introduction Definition and Principles of TCAR OPS as well as TCAR OPS Parts and the provisions for the transition for Commercial Air operations and Operations requiring a specific approval.

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SECTION I - INTRODUCTION AND PRINCIPLES

Article 1 - Introduction

In this publication the word 'must' or 'shall' is used to indicate where the Director General requires the organisation, owner or operator to respond to and comply with, or adhere closely to, the defined requirement.

If the organisation's/owner's/operator's response is deemed to be inadequate by the Director General, a specific requirement or restriction may be applied as a condition of the appropriate instrument to be issued under Thailand Civil Aviation Regulations.

Article 2 - Definitions

For the purpose of this Regulation, the following definitions apply:

(1) 'Acceptable means of compliance (AMC)' means non-binding standards adopted by the CAAT to illustrate means to establish compliance with the requirements of the regulations;

(2) 'Alternative means of compliance (AMoC)' means those means that propose an alternative to an existing AMC or those that propose new means to establish compliance with the requirements of the regulations for which no associated AMC have been adopted by the CAAT;

(3) 'Aeroplane' means a power-driven heavier-than-air aircraft, deriving its lift in flight chiefly from aerodynamic reactions on surfaces which remain fixed under certain conditions of flight;

(4) 'Aerodrome' means a defined area, on land or on water, on a fixed, fixed offshore or floating structure, including any buildings, installations and equipment thereon, intended to be used either wholly or in part for the arrival, departure and surface movement of aircraft;

(5) 'Aircraft' means any machine that can derive support in the atmosphere from the reactions of the air other than reactions of the air against the earth's surface;

(6) 'Aircraft operator' means any legal or natural person operating or proposing to operate one or more aircraft;

(7) 'Aircrew' means flight crew and cabin crew member;

(8) 'Approved training organisation (ATO)' means an organisation which is entitled to provide training to pilots on the basis of an approval issued by the CAAT;

(9) 'Basic Instrument Training Device (BITD)' means a ground-based training device for the training of pilots representing the student pilot's station of a class of aeroplanes, which may use screen-based instrument panels and spring-loaded flight controls, and providing a training platform for at least the procedural aspects of instrument flight;

(10) 'Cabin crew member' means an appropriately qualified crew member, other than a flight crew or technical crew member, who is assigned by an operator to perform duties related to the safety of passengers and flight during operations;

(11) 'Certificate' means any certificate, approval, licence, authorisation, attestation or other document issued as the result of a certification attesting compliance with the applicable requirements;

(12) 'Certification' means any form of recognition in accordance with this Regulation, based on an appropriate assessment, that a legal or natural person, product, part, non-installed equipment, equipment to control unmanned aircraft remotely, aerodrome, safety-related aerodrome equipment, ATM/ANS system, ATM/ANS constituent or flight simulation training device complies with the applicable requirements of this Regulation and of the delegated and implementing acts adopted on the basis thereof, through the issuance of a certificate attesting such compliance;

(13) 'Certification specifications (CS)' mean technical standards adopted or accepted by the CAAT indicating means to be used by an organisation for the purpose of certification;

(14) 'Chicago Convention' means the Convention on International Civil Aviation and the Annexes thereto, signed in Chicago on 7 December 1944;

(15) 'Commercial air transport' means an aircraft operation to transport passengers, cargo or mail for remuneration or other valuable consideration;

(16) 'Complex Motor-Powered Aircraft' (CMPA) shall mean:

(i) an aeroplane:

- with a maximum certificated take-off mass exceeding 5 700 kg, or
- certificated for a maximum passenger seating configuration of more than nineteen, or
- certificated for operation with a minimum crew of at least two pilots, or
- equipped with (a) turbojet engine(s) or more than one turboprop engine, or

(ii) a helicopter certificated:

- for a maximum take-off mass exceeding 3 175 kg, or
- for a maximum passenger seating configuration of more than nine, or
- for operation with a minimum crew of at least two pilots, or

(iii) a tilt rotor aircraft.

(17) 'Credit' means the recognition of prior experience or qualifications;

(18) 'Flight simulation training device' means any type of device in which flight conditions are simulated on the ground, including flight simulators, flight training devices, flight and navigation procedures trainers and basic instrument training devices;

(19) FSTD categories are:

(i) in the case of aeroplanes, a full flight simulator (FFS), a flight training device (FTD), a flight and navigation procedures trainer (FNPT) or a basic instrument training device (BITD);

(ii) in the case of helicopters, a full flight simulator (FFS), a flight training device (FTD) or a flight and navigation procedures trainer (FNPT).

(20) 'Helicopter' means a heavier-than-air aircraft supported in flight chiefly by the reactions of the air on one or more power-driven rotors on substantially vertical axes;

(21) 'Principal place of business' of an organisation means the head office or registered office of the organisation within which the principal financial functions and operational control of the activities referred to in this Regulation are exercised;

(22) 'TCAR PEL - FCL licence' means a flight crew licence that complies with TCAR PEL Part FCL requirements.

(23) 'TCAR OPS Parts' means TCAR OPS Part DEF, ORO, CAT, SPA and CC.

Article 3 - Objective

(1) The principal objective of TCARs regulations is to establish and maintain a high uniform level of civil aviation safety in the Kingdom of Thailand.

(2) TCARs Regulations further aims to:

(a) contribute to the Thailand aviation safety policy and to the improvement of the overall performance of the civil aviation sector;

(b) facilitate the mutual recognition of goods, persons, services, and capital, providing a level playing field for all actors in the ASEAN market, and improve the competitiveness of the Thai aviation industry;

(c) facilitate the movement of goods, services and personnel worldwide, by promoting the mutual acceptance of certificates and other relevant documents;

(d) promote cost-efficiency, avoiding duplication, and promoting effectiveness in regulatory, certification and oversight processes;

(e) promote, worldwide, the views of the Kingdom of Thailand regarding civil aviation standards and civil aviation regulations;

(f) support passenger confidence in a safe civil aviation.

Article 4 - Subject matter and scope

(1) This Cover regulation as well as TCAR OPS Part DEF, ORO, CAT, SPA and CC and other Air Operations regulations lay down:

(a) the different types of authorisations and approvals required for:

a. commercial operations with aeroplanes and helicopters;

b. operations in specific conditions that require a specific approval from the CAAT.

(b) the requirements for commercial operations;

(c) the requirements for operations requiring a specific approval;

(d) the requirements for issuing, maintaining, amending, limiting, suspending or revoking Air Operators certificates granted to Air operators performing CAT operations with aeroplanes and/or helicopters;

(e) the requirements for issuing, maintaining, amending, limiting, suspending or revoking the authorisations granted to Air operators performing operations requiring a specific approval;

(f) the requirements for initial cabin crew training,

(g) the requirements for the persons conducting training or checking of cabin crew members;

(h) the conditions for the recognition of trainings performed in accordance with the regulations in force before the entry into force of this cover regulation and TCAR OPS Part DEF, ORO, CAT, SPA and CC.

(2) Operations covered by this cover regulation and TCAR OPS Part DEF, ORO, CAT, SPA and CC are operations of aeroplanes and helicopters, which are registered in Thailand.

(3) This Regulation does not apply to air operations with airships, balloons, powered-lifts, ultralights and gliders.

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SECTION II - Commercial Air operations

Article 5 - Commercial air transport operators

(1) An operator shall only operate an aircraft for the purpose of CAT operations if it holds an Air Operator Certificate issued in accordance with Regulation of the Civil Aviation Authority of Thailand No. 26 on the Air Operator Certificate and the Regulation of the Civil Aviation Authority of Thailand No. 27 on the Operation of Air Operator Certificate holder, and TCAR OPS Part ORO; and appropriate for the type of operations to be performed.

(2) An operator shall only be issued a TCAR OPS Air Operator Certificate when it was found compliant with the detailed requirements contained in this cover regulation and in TCAR OPS Part ORO and Part CAT applicable to the type of operations to be performed.

(3) An operator engaged in CAT operations starting and ending at the same aerodrome/operating site with Performance class B aeroplanes or non-complex helicopters shall only be issued a TCAR OPS Air Operator Certificate when it was found compliant with the detailed requirements contained in this cover regulation and in TCAR OPS Part ORO and Part CAT.

(4) Air Operator Certificate may be limited, suspended or revoked when the holder does not comply with Section 41/120 and Section 41/121 of Air Navigation Act B.E. 2497 (as amended) and the applicable detailed requirements contained in this cover regulation and in TCAR OPS Part ORO and Part CAT applicable to the type of operations to be performed.

Article 5a – Cabin crew members

(1) A person may only act as a cabin crew member in commercial air transport if he or she holds a valid cabin crew initial training certificate and a valid medical certificate appropriate to the operations to be performed and compliant to this cover regulation, TCAR OPS Part CC and applicable medical regulations.

(2) A person shall only be issued a cabin crew initial training certificate according to TCAR OPS Part CC when he or she was found compliant with the detailed requirements contained in this cover regulation and in TCAR OPS Part CC.

Article 5b – Cabin crew instructors

(1) A person may deliver cabin crew training only if he or she:

(a) holds an authorisation issued by:

(i) an appropriate training organisation approved by the CAAT; or

(ii) an AOC holder approved to deliver cabin crew initial training in accordance with TCAR OPS Part ORO.

(b) complies with the applicable requirements contained in TCAR OPS Part CC.

Article 5c – Cabin crew evaluators

(1) A person may conduct cabin crew checking only if he or she:

(a) has been authorised:

(i) by an appropriate training organisation approved by the CAAT; or

(ii) by an AOC holder approved to deliver cabin crew initial training in accordance with TCAR OPS Part ORO;

(b) Complies with the applicable requirements contained in TCAR OPS Part CC.

Article 6 – Evidence-based training

To initiate mixed EBT programme, CAT operators shall have gained at least 12 months of operational experience with TCAR OPS.

Article 6a – Flight and duty times

(1) Flight and duty time limitations apply to CAT shall be implemented in compliance with the detailed requirements contained in TCAR OPS Part ORO:

(a) For commercial air transport by aeroplanes for scheduled and charter operations, excluding emergency medical service (EMS), air taxi and single pilot operations, flight and duty time limitations shall be implemented in compliance with the detailed requirements contained in TCAR OPS Part ORO Subpart FTL.

(b) For CAT operations with helicopters, air taxi, emergency medical services and single pilot CAT operations; flight and duty time limitations shall be implemented in compliance with the detailed requirements contained in TCAR OPS Part ORO Subpart FTLS.

(2) To apply for FRM approval, CAT operators shall have gained at least 24 months of operational experience with TCAR OPS.

SECTION III - Operations requiring specific approval

Article 7 - Operations requiring a specific approval

(1) An Operator shall only operate an aircraft for the type of operations listed in (3) of this article if it holds a specific approval issued by the CAAT in accordance with TCAR OPS Part SPA;

(2) An operator shall only be issued a TCAR OPS authorisation for operations requiring a specific approval when it was found compliant with the detailed requirements contained in this cover regulation and in TCAR OPS Part SPA applicable to the type of operations to be performed;

(3) Specific approval from the CAAT is required for operations with:

(a) aeroplanes and helicopters used for:

(i) Operations in airspace, routes or approaches that require compliance with the following PBN Specifications:

- RNP AR APCH; and
- RNP 0.3 for helicopter operation

(ii) operations in airspace requiring compliance with minimum navigation performance specifications (MNPS);

(iii) operations in airspace where a reduced vertical separation minimum of 300 m (1000 ft) applies (RVSM);

(iv) Low-visibility operations (LVOs) and operations with operational credits;

(v) the transport of dangerous goods (DG);

(b) aeroplanes that are used for extended range operations/extended diversion time operations (ETOPS/EDTO) in CAT operations.

(c) helicopters used for:

(i) operations under VFR at night with the aid of night vision imaging systems (NVIS);

(ii) hoist operations (HHO);

(iii) emergency medical service operations (HEMS);

(iv) offshore operations for CAT operations, specialised operations and non-commercial operations with complex helicopters (HOFO);

(v) helicopter point-in-space approaches and departure with reduced VFR minima (PinS)

(d) single-engine turbine aeroplanes used for CAT operations at night or in instrument meteorological conditions (SET-IMC);

(e) aeroplanes and helicopters used for CAT operations with the use of a type B EFB application.

(4) A specific approval may be limited, suspended or revoked when the holder does not comply with the applicable detailed requirements contained in this cover regulation and in TCAR OPS Part SPA as applicable to the type of operations to be performed.

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SECTION IV - Provisions for the transition

Article 8 - Entry into force and application

(1) This cover regulation as well as TCAR OPS Parts, shall enter into force on 8 December 2023.

(2) The TCAR OPS Air Operations regulation as well as TCAR OPS Parts shall be fully applicable and binding in their entirety from the 3 December 2026. Beyond this date, operators shall comply with the detailed requirements contained in this TCAR OPS Air Operations regulation and TCAR OPS Parts and shall have obtained, from the CAAT, the appropriate certificate, approval or authorisation issued in accordance with this TCAR OPS Air Operations regulation and TCAR OPS Parts as applicable.

(3) Between the date in (1) and the date in (2), the transition period operators shall comply with the provisions contained in this Section.

(4) This transition period is applicable for the existing AOC holder and the applicant who already apply before 3 December 2023.

(5) AOC applicants who submit AOC Application before 3 December 2023 may obtain an AOC issued in accordance with the regulations in force before the entry into force of this cover regulation and TCAR OPS Parts as specified in Article 10.

Article 8a – Transition for cabin crew, CC instructor/evaluator

(1) To continue exercising their privileges as a cabin crew member for commercial air transport operations after the 3 December 2026, cabin crew members shall have obtained a cabin crew initial training certificate issued in accordance with TCAR OPS Part CC, from an AOC holder or an organisation authorised to issue such certificate.

(2) A person nominated or designated by an operator as senior cabin crew member before 3 December 2026 in accordance with the regulations in force before the entry into force of this cover regulation and corresponding TCAR OPS Parts shall be considered by the CAAT as meeting the prerequisite requirements contained in TCAR OPS Parts for the same position.

(3) Transition for instructors/evaluators

(a) To continue exercising the privileges for checking cabin crew members and corresponding instructors after 30 September 2025, evaluators shall meet the requirements contained in TCAR OPS Part CC and ORO.

(b) To continue exercising the privileges of an instructors for cabin crew training after 30 September 2025, instructors shall meet the requirements contained in TCAR OPS Part CC and ORO.

Article 9 - Equivalence of regulations

(1) During the transition period, when compliance with the detailed requirements contained in this cover regulation and in TCAR Parts has been demonstrated to the CAAT:

(a) for a training programme or course for flight crew, cabin crew member and flight operations officers, as well as corresponding instructors and examiners;

(b) for checking and assessment of flight crew, cabin crew member and flight operations officers as well as corresponding instructors and evaluators;

(c) for the requirements applicable to air operators in terms of organisation, management system, personnel, facilities as well as manuals, operating procedures and records;

(d) for crew composition;

(e) for specific approvals;

(f) for flight time limitations;

(g) for performance and operating limitations;

(h) for instrument, data and equipment;

(i) for ground handling operations.

It shall be considered by the CAAT that compliance with corresponding requirements in regulations in force before the entry into force of this cover regulation and TCAR OPS Parts, is also achieved.

(2) Operators may propose to comply with some provisions of TCAR OPS Air operations regulation and TCAR OPS Parts by anticipation without waiting for limit dates listed in this section. This shall be formally agreed by the CAAT.

(3) In such cases the CAAT may impose any related requirement.

Article 10 - Application to obtain an AOC

(1) Applicants for an AOC who already submitted the required documentation to demonstrate compliance with the regulation in force before the entry into force of this cover regulation and TCAR OPS Part DEF, ORO, CAT, SPA and CC:

(a) may continue the demonstration of compliance using as reference the regulation in force before the entry into force of this TCAR OPS Air Operation regulation and TCAR OPS Parts;

(b) shall complete the demonstration of compliance in (a) and obtain the corresponding AOC issued in accordance with the regulation in force before the entry into force of this TCAR OPS Air Operation regulation and TCAR OPS Parts not later than 31 March 2025;

(c) shall provide a plan for the transition to TCAR OPS Air Operation regulation and TCAR OPS Parts before to obtain an AOC issued in accordance with the regulation in force before the entry into force of this TCAR OPS Air Operation regulation and TCAR OPS Parts;

(d) The transition plan in (c) shall consider the relevant dates not to exceed in article 27 and shall be accepted by the CAAT.

(2) Unless formally agreed with the CAAT, applicants for an AOC who already applied before the entry into force of this TCAR OPS Air Operation regulation and TCAR OPS Parts but did not submit the required documentation to demonstrate compliance with the regulation in force before the entry into force of this TCAR OPS Air Operation regulation and TCAR OPS Parts shall submit their documentation and shall demonstrate compliance with this TCAR OPS Air operation regulation and TCAR OPS Parts. When it is agreed between the CAAT and the applicant to continue the demonstration of compliance with the regulation in force before the entry into force of this cover regulation and TCAR OPS Part DEF, ORO, CAT, SPA and CC; then the provision contained in (1) (b) to (d) shall be applicable.

(3) Applicants for an AOC applying after the entry into force of this cover regulation and TCAR OPS Part DEF, ORO, CAT, SPA and CC shall demonstrate compliance with this cover regulation and TCAR OPS Part DEF, ORO, CAT, SPA and CC to obtain an AOC.

(4) By derogation to (2) and (3), the applicants may establish flight operations officer/dispatcher training programmes in accordance with the regulation in force before the entry into force of this cover regulation and TCAR OPS DEF, ORO, CAT, SPA and CC to demonstrate compliance and obtain an AOC issued in accordance with the regulation in force before the entry into force of this this cover regulation and TCAR OPS DEF, ORO, CAT, SPA and CC.

In this case, to continue CAT operations after 3 December 2026, the applicant shall consider the relevant provision detailed in article 27 to obtain AOC issued in accordance with this cover regulation and TCAR OPS Parts.

Article 11 - Change management and transition plan to TCAR OPS

(1) CAT operators shall perform a change management process before implementing the organisational, procedural and documentation changes planned to comply with this cover regulation and TCAR OPS Part DEF, ORO, CAT, SPA and CC. This change management process shall, in particular, assess and mitigate:

(a) the risk of pairing of crews with different levels of training;

(b) the risk that members of a same crew use different procedures.

(2) CAT operators shall plan for the transition to TCAR OPS Part DEF, ORO, CAT, SPA and CC considering the dates not to exceed in article 27.

(3) CAT operators shall provide to the CAAT, not later than 6 months after the entry into force of this Regulation, their detailed transition plan including the date at which full compliance with this cover regulation and TCAR OPS Part DEF, ORO, CAT, SPA and CC is planned to be achieved.

Article 12 - Management system

(1) CAT operators approved before the entry into force of this cover regulation and corresponding TCAR OPS Parts shall comply with the following requirements during the transition period:

(a) Personnel involved in compliance monitoring shall have received a training to TCAR OPS provisions, accepted by the CAAT, before submission of any TCAR OPS compliance data or 30 April 2024, whichever occurs first;

(b) The compliance monitoring programme of the 12 months preceding the planned operator compliance date shall be implemented using the detailed requirements contained in this cover regulation and TCAR OPS Parts. Such programme shall be completed no later than 30 September 2026 to demonstrate the full compliance with TCAR OPS.

(c) Documents submitted to the CAAT to demonstrate compliance to this cover regulation and corresponding TCAR OPS Parts, in particular, the operations manual, shall be supported by a statement from the compliance manager that the documents submitted were verified and found in compliance with the detailed requirements contained in this cover regulation and TCAR OPS Parts.

Article 13 - Use of operating procedures

Revised procedures applicable to flight crews, cabin crew members and flight operations officers contained in Operations Manual (OMA and OMB) to comply with this cover regulation and corresponding TCAR OPS Parts shall not be implemented until the flight crews, cabin crew members and flight operations officers involved have been trained to these procedures.

Article 14 - Validity of training delivered before the entry into force of TCAR OPS

Trainings delivered to personnel involved in operations of aircraft, including management personnel and other personnel of an operator delivered before the entry into force of this cover regulation and corresponding TCAR OPS Parts in accordance with training programmes approved by the CAAT in accordance with the regulations in force at that time may be considered as valid to demonstrate compliance with the equivalent requirements of TCAR OPS Parts.

Article 14a - Flight crew requirements for maintenance check flights

A pilot having acted, before 3 December 2026, as a pilot-in-command on a maintenance check flight that in accordance with the definition in point SPO.SPEC.MCF.100 in TCAR OPS Part SPO is categorised as a Level A maintenance check flight, shall be given credit for the purpose of complying with point SPO.SPEC.MCF.115(a)(1) of that TCAR OPS Part SPO. In that case, the operator shall ensure that the pilot-in-command receives a briefing on any differences identified between the previous operating practices established and the obligations provided in TCAR OPS Part SPO Section 5 Maintenance check flights (MCFs).

Article 15 - Validity of flight crew training, qualifications and nomination delivered by CAT operators before the entry into force of TCAR OPS

(1) Trainings listed in (3) of this article, that were delivered to Flight crews by CAT operators, before the entry into force of this cover regulation and corresponding TCAR OPS Parts in accordance with training programmes approved by the CAAT in accordance with the regulations applicable before the entry into force of this cover regulation and corresponding TCAR OPS Parts shall remain valid and shall be considered as compliant with the corresponding requirements of TCAR OPS Part ORO.

(2) Notwithstanding (1) of this article, for trainings listed in (3) of this article delivered to Flight crews by CAT operators, after the entry into force of this cover regulation and corresponding TCAR OPS Parts and complying with the following requirements shall remain valid and shall be considered as compliant with corresponding TCAR OPS requirements provided:

  (a) The training and the corresponding checking are successfully completed not later than 31 January 2027; and

  (b) The training is delivered in accordance with training programmes approved by the CAAT in accordance with the regulations in force before the entry into force of this cover regulation and corresponding TCAR OPS Parts.

(3) Training stated in (1) and (2) are:

  (a) Crew resource management courses;

  (b) Type rating training course containing-operator's conversion training;

  (c) Differences and familiarisation training;

  (d) Commander course training;

  (e) The training to operate from a particular seat;

  (f) Upset prevention and recovery training;

  (g) Training to security;

  (h) Training for operations on more than one type or variant;

  (i) Training to dangerous goods;

  (j) Training to operations requiring specific approvals unless specified otherwise in this TCAR OPS Air operation regulation.

(4) A person nominated or designated by an operator as PIC or commander for supervision and checking of line flying before 3 December 2026 in accordance with the regulations in force before the entry into force of this cover regulation and corresponding TCAR OPS Parts shall be considered by the CAAT as meeting the prerequisite requirements contained in TCAR OPS Parts for the same position.

Article 16 - Validity of cabin crew training, qualifications and nomination delivered by CAT operators

(1) Trainings listed in (3) of this article, that were delivered to cabin crew members by CAT operators, before the entry into force of this cover regulation and corresponding TCAR OPS Parts in accordance with training programmes approved by the CAAT in accordance with the regulation applicable before the entry into force of this cover regulation and corresponding TCAR OPS Parts shall remain valid and shall be considered as compliant with the corresponding requirements of TCAR OPS Parts

(2) Notwithstanding (1) of this article, for trainings listed in (3) of this article that were delivered to cabin crew members by CAT operators, after the entry into force of this cover regulation and corresponding TCAR OPS Parts and complying with the following requirements shall remain valid and shall be considered as compliant with the corresponding requirements of TCAR OPS Parts:

(a) The training and the corresponding checking are successfully completed not later than 3 December 2026; and

(b) The training is delivered in accordance with training programmes approved by the CAAT in accordance with the regulation in force before the entry into force of this cover regulation and corresponding TCAR OPS Parts

(3) Training stated in (1) and (2) are:

(a) Crew resource management courses;

(b) Operator's conversion training;

(c) Aircraft type specific training;

(d) Differences and familiarisation training;

(e) Training to Dangerous goods.

(4) Initial cabin crew training and checking are completed on or before the 3 December 2026 and delivered in accordance with a training programme approved by the CAAT in accordance with the regulations in force before the entry into force of this cover regulation and TCAR OPS Parts shall be considered as equivalent to the initial training required by TCAR OPS Part CC. Applicants shall be given full credit for these training for obtaining a TCAR OPS Part CC cabin crew initial training certificate.

(5) Unless formally accepted by the CAAT, cabin crew initial training commenced after the 30 September 2026 shall be delivered in accordance with training programmes compliant with TCAR OPS Part CC and by instructors qualified in accordance with TCAR OPS Part CC.

(6) For the initial cabin crew training that could not be completed before 3 December 2026, applicants shall obtain a credit of the previous training syllabus and shall be allowed to continue and complete the training and checking in accordance with TCAR OPS Part CC in an AOC or organisation authorised to deliver CC initial training. This requires to perform an assessment of the applicant to define the training to be credited and to identify the training needs. It should be based on the relevant training syllabus established in accordance with TCAR OPS Part CC.

(7) A person nominated or designated by an operator as senior cabin crew member, CC instructor/evaluator before 3 December 2026 in accordance with the regulations in force before the entry into force of TCAR OPS Air Operations regulation and TCAR OPS Parts shall be considered by the CAAT as meeting the prerequisite requirements contained in TCAR OPS Parts for the same position.

Article 17 - Validity of flight operations officer training delivered by CAT operators before the entry into force of TCAR OPS

(1) Trainings listed in (3) of this article, that were delivered to Flight operations officers by CAT operators, before the entry into force of this cover regulation and corresponding TCAR OPS Parts in accordance with training programmes approved by the CAAT in accordance with the regulation applicable before the entry into force of this cover regulation and corresponding TCAR OPS Parts shall remain valid and shall be considered as compliant with the corresponding requirements of TCAR OPS Part ORO.

(2) Notwithstanding (1) of this article, for trainings listed in (3) of this article that were delivered to Flight operations officers by CAT operators, after the entry into force of this cover regulation and TCAR OPS Parts and complying with the following requirements shall remain valid and shall be considered as compliant with the corresponding requirements of TCAR OPS Part ORO:

  (a) The training and the corresponding checking are successfully completed not later than 30 June 2026; and

  (b) The training is delivered in accordance with training programmes approved by the CAAT in accordance with the regulation in force before the entry into force of this cover regulation and TCAR OPS Parts.

(3) Training stated in (1) and (2) are:

  (a) Operator's conversion training;

  (b) Differences and familiarisation training;

  (c) New route/destination training;

  (d) Training to dangerous goods;

  (e) Training to operations requiring specific approvals unless specified otherwise in this TCAR OPS Air operation regulation.

(4) For Initial Flight operations officers training and the corresponding checking performed by CAT operators and completed before the 30 June 2026, in accordance with training programmes approved by the CAAT, in accordance with the regulation in force before the entry into force of this cover regulation and TCAR OPS Parts, shall be considered as compliant with the equivalent requirements of TCAR OPS Part ORO and TCAR PEL Part FOO.

Article 18 - Validity of cabin crew training delivered by other operators than CAT operators before the entry into force of TCAR OPS

(1) For cabin crew members, not holding a valid cabin crew initial training certificate, who have already acquired experience as cabin crew member in operations other than CAT, credit may be granted to the elements of the initial training programme he/she has previously completed if such training elements are documented in his/her training records.

(2) In such a case, the operator should ensure that:

(a) the full training programme, as specified in TCAR OPS Part CC, has been covered; and

(b) cabin crew member passed the associated examination.

(3) Credits granted in accordance with (1) of this article shall be considered as valid to obtain a cabin crew initial training certificate

Article 19 - Training to TCAR OPS

The training programmes for flight crews, cabin crew members, flight operations officers and other personnel shall include the necessary elements for the transition to TCAR OPS.

Article 20 - Validity of specific approvals granted before the entry into force of TCAR OPS

(1) During the transition period, operators who obtained specific approvals in accordance with the regulations in force before the entry into force of this cover regulation and corresponding TCAR OPS Parts may continue to perform such operations, until 3 December 2026 or until they obtain a TCAR OPS AOC, whichever occurs first. After this date they shall only perform operations for which they are authorised in accordance with their TCAR OPS Part ORO Subpart AOC.

(2) The detailed requirements for the issuance of some specific approvals contained in TCAR OPS Part SPA being equivalent to the provisions contained in the regulations applicable before the entry into force of this cover regulation and corresponding TCAR OPS Parts, these specific approvals granted in accordance with previous regulations shall be considered by the CAAT as compliant with the detailed requirements contained in this cover regulation and corresponding TCAR OPS Parts and shall not require any specific demonstration from the operator to obtain the corresponding TCAR OPS specific approval.

(3) The specific approvals stated in (2) are:

(a) The following Performance-Based Navigation (PBN) approvals:

(i) RNP AR APCH for aeroplanes and helicopters; or

(ii) RNP 0.3 for helicopters.

(b) Operations in Airspace with Reduced Vertical Separation Minima (RVSM);

(c) Dangerous Goods;

(d) Single-Engined Turbine Aeroplane Operations at Night or Instrument Meteorological Conditions (SET-IMC);

(e) Helicopters Emergency Medical Service Operations (HEMS).

Article 21 - Granting of a specific approval during the transition period

(1) During the transition period, Specific approvals may continue to be granted to operators in accordance with the regulations in force before the entry into force of this cover regulation and corresponding TCAR OPS Parts until 31 December 2025. Such specific approvals shall be added to the Operations specifications or Specific Approval issued in accordance with the regulations in force before the entry into force this cover regulation and TCAR OPS Parts.

(2) From the 01 January 2026, specific approvals shall be granted using the detailed requirements contained in this cover regulation and in TCAR OPS Part SPA. In accordance with article 9 on the equivalence of the regulations, such specific approval shall be added to the operations specifications or specific approval issued in accordance with the regulations in force before the entry into force this cover regulation and corresponding TCAR OPS Parts.

(3) Any specific approval granted using the detailed requirements contained in this corresponding regulation and in TCAR OPS Part SPA, as specified in (2) of this article shall be added to the Operations Specifications or Specific Approval issued in accordance with TCAR OPS without requiring further demonstration for the issuance of their TCAR OPS AOC or TCAR OPS specific approval as applicable to the type of operations.

(4) Notwithstanding (2), specific approvals for PBN operations listed in Article 22 (2) may continue to be granted for additional PBN navigation specifications beyond 01 January 2026. In such cases the approval shall be granted using the detailed requirements contained in the regulations in force before the entry into force of this cover regulation and corresponding TCAR OPS Parts until the operator obtains an AOC or authorisation issued in accordance with TCAR OPS.

Article 22 - Specific approvals for PBN operations

(1) For commercial air transport operators, to continue performing those PBN operations that require a specific approval according to the regulations in force before the entry into force of this cover regulation and corresponding TCAR OPS Parts but do not require a specific approval in accordance with TCAR OPS Air Operations regulation and TCAR OPS Parts, operators shall:

(a) Hold the appropriate specific approval in the operations specifications attached to their AOCs, issued in accordance with the regulations in force before the entry into force of this cover regulation and corresponding TCAR OPS Parts until issuance of TCAR OPS AOC;

(b) continue to operate for the approved PBN operations in accordance with the procedures approved in accordance with the regulations applicable before the entry into force of this cover regulation and corresponding TCAR OPS Parts until issuance of TCAR OPS AOC.

(2) PBN operations mentioned in (1) that require a specific approval according to the regulations in force before the entry into force of this cover regulation and corresponding TCAR OPS Parts but do not require a specific approval in accordance with this cover regulation and TCAR OPS Parts are:

(a) RNAV 10;

(b) RNAV 5;

(c) RNAV 2;

(d) RNAV 1;

(e) RNP 4;

(f) RNP 2;

(g) RNP 1;

(h) A-RNP;

(i) RNP APCH (LNAV);

(j) RNP APCH (LNAV/VNAV);

(k) RNP APCH (LP);

(l) RNP APCH (LPV).

(3) PBN operations mentioned in (2) do not require a specific approval in accordance with this cover regulation and corresponding TCAR OPS Parts. The corresponding PBN specification will not be endorsed on the operations specifications attached to an AOC granted to a CAT operator or on the specific approval granted to other operators. However, operators shall comply with the detailed requirements for airworthiness approval, crew training, operating procedures and monitoring programs as required in TCAR OPS Part ORO, Part CAT, Part NCC, Part NCO or SPO as applicable to the type of PBN operations to be performed.

Article 23 - Specific approvals for MNPS operations

For commercial air transport operators, to continue performing MNPS operations, operators shall:

(1) Hold the appropriate specific approval in the operations specifications attached to their AOCs, issued in accordance with the regulations in force before the entry into force of this cover regulation and TCAR OPS Parts until issuance of TCAR OPS AOC;

(2) continue to operate for the approved MNPS operations in accordance with the procedures approved in accordance with the regulations applicable before the entry into force of this cover regulation and TCAR OPS Parts until issuance of TCAR OPS AOC.

Article 24 - Specific approvals for LVOs and operations with operational credits

(1) CAT operators holding specific approvals for LVO operations issued by the CAAT may continue to operate in accordance with the regulations in force before the entry into force of this cover regulation and TCAR OPS Parts until 3 December 2026 or until the issuance of their TCAR OPS AOC, whichever occurs first.

(2) To continue to perform LVO operations after the date mentioned in (1), operators shall obtain a specific approval appropriate to the LVO operations to be performed and issued by the CAAT in accordance with the detailed requirements contained in this cover regulation and TCAR OPS Part SPA.

(3) For operators holding specific approvals for LVO operations issued by the CAAT in accordance with the regulations in force before the entry into force of this cover regulation and TCAR OPS Parts shall:

(a) Provide LVOs performance monitoring data and the assessment of suitability of aerodrome including instrument flight procedures data acquired using TCAR OPS approved procedure and flight crew holding TCAR PEL licence and trained to TCAR OPS procedures;

(b) The LVOs performance monitoring data and the assessment of suitability of aerodrome including flight instrument procedures data required to obtain the corresponding LVO operations specific approval shall be agreed on a case-by-case basis with the CAAT.

(4) Experience gained in LVO operations by an operator holding an AOC issued in accordance with the regulations in force before the entry into force of this cover regulation and TCAR OPS Parts may be considered as valid by the CAAT for the issuance of a LVO specific approval.

Article 25 – ETOPS/ EDTO Two and more- engines aeroplanes used for extended range operations/extended diversion time operations (ETOPS/EDTO).

(1) CAT operators holding specific approvals for ETOPS/EDTO operations issued by the CAAT may continue to operate in accordance with the regulations in force before the entry into force of this cover regulation and corresponding TCAR OPS Parts until 3 December 2026 or until the issuance of their TCAR OPS AOC, whichever occurs first.

(2) To continue to perform ETOPS/EDTO operations after the date mentioned in (1), operators shall obtain a specific approval appropriate to the ETOPS/EDTO operations to be performed and issued by the CAAT in accordance with the detailed requirements contained in this cover regulation and TCAR OPS Part SPA.

(3) To obtain a specific approval for ETOPS/EDTO operations, operators shall demonstrate compliance with applicable provisions contained in this cover regulation and corresponding TCAR OPS Parts.

(4) Notwithstanding (3), when operators justify that the TCAR OPS ETOPS/EDTO procedures are identical to the ETOPS/EDTO procedures approved in accordance with the regulations in force before the entry into force of this cover regulation and corresponding TCAR OPS Parts, the operational demonstration may be reduced by the CAAT to:

(a) At least one demonstration flight for each airframe/engine combination (AEC) to assess the operational control and in-flight monitoring; and

(b) A session in appropriate FSTD for each airframe/engine combination (AEC) to assess the necessary emergency procedures specific to ETOPS/EDTO operations;

(c) The demonstration flight in (a) may be performed during CAT ETOPS/EDTO operations.

(5) Experience gained in ETOPS/EDTO operations by an operator holding an AOC issued in accordance with the regulations in force before the entry into force of this cover regulation and corresponding TCAR OPS Parts may be considered as valid by the CAAT for the issuance of ETOPS/EDTO specific approval.

Article 26 - Type B EFB application by a CAT operator.

(1) CAT operators holding specific approval for using a type B EFB application issued by CAAT may continue to operate in accordance with the regulation in force before the entry into force of this cover regulation and corresponding TCAR OPS Parts until 3 December 2026 or until the issuance of their TCAR OPS AOC, whichever occurs first.

(2) Operational evaluation test data submitted for the issuance of the type B EFB application approval in accordance with the regulation in force before the entry into force of this this cover regulation and corresponding TCAR OPS Parts may be used for the issuance of the new type B EFB application approval, where applicable.

(3) If operational evaluation test data as mentioned in (2) do not demonstrate compliance to TCAR OPS Part SPA, additional data shall be provided to the CAAT to demonstrate compliance to TCAR OPS Part SPA.

(4) For additional data mentioned in (3), the in-service proving period may be reduced to 2 months.

Article 27 - Transition for commercial air transport operations

(1) To continue exercising their privileges as a CAT operator, holders of AOCs issued by the CAAT according to regulations in force before the entry into force of this cover regulation and corresponding TCAR OPS Parts shall comply:

(a) with the provisions contained in article 11 of this regulation;

(b) with the provisions contained in article 12 of this regulation.

(2) To continue exercising their privileges as a CAT operator, holders of AOCs issued by the CAAT according to regulations in force before the entry into force of this cover regulation and corresponding TCAR OPS Parts shall submit their Operations Manual Part A not later than 31 December 2024. Such operator shall obtain approval/acceptance of this manual from the CAAT in accordance with TCAR OPS Part ORO not later than 31 March 2025.

(3) To continue exercising their privileges as a CAT operator, holders of AOCs issued by the CAAT according to regulations in force before the entry into force of this cover regulation and corresponding TCAR OPS Parts shall:

(a) verify the compliance to TCAR OPS Part CAT Subpart IDE of each aircraft in their fleet and for each aircraft that enters their fleet during the transition;

(b) the verification in (a) shall also include the compliance to the other specific requirements of TCAR OPS Part SPA as applicable to type of operations authorised to be performed with a specific aircraft;

(c) provide the corresponding status containing the status of compliance required in (a) and (b) to the CAAT, not later than 31 December 2024;

(d) in case the status in (c) contains non-compliances with TCAR OPS Part CAT Subpart IDE, the operator shall include in its transition plan as referred to in article 11 the necessary actions for making the aircraft compliant with TCAR OPS Part CAT subpart IDE. This plan shall demonstrate that the concerned aircraft will comply with TCAR OPS Part SPO Subpart IDE not later than 3 December 2026;

(e) in case the status in (c) shows non-compliances with TCAR OPS Part SPA requirement related to instrument data and equipment but demonstrates compliance with the regulations in force before the entry into force of this TCAR OPS Air Operations regulation and TCAR OPS Parts, the operator shall:

(i) inform the CAAT of its intention to continue or not the operations requiring the specific approval for which an aircraft is not compliant in term of instrument, data and equipment;

(ii) In the case the operator is willing to continue such operations, the operator shall include in its transition plan as referred to in article 11 the necessary actions for making the aircraft compliant with TCAR OPS Part SPA. This plan shall demonstrate that the concerned aircraft will comply with the requirements of TCAR OPS Part SPA, applicable to the type of operations, not later than 3 December 2026 or the target date to obtain the TCAR OPS AOC, whichever occurs first

(4) To continue exercising their privileges as a CAT operator, holders of AOCs issued by the CAAT according to regulations in force before the entry into force of this cover regulation and corresponding TCAR OPS Parts shall demonstrate to the CAAT that their facilities, organisation and Management system are compliant with TCAR OPS Part ORO (except ORO.GEN.200 (a) (3)) not later than 30 September 2026.

(5) To continue exercising their privileges as a CAT operator, holders of AOCs issued by the CAAT according to regulations in force before the entry into force of this cover regulation and corresponding TCAR OPS Parts shall submit their Operations Manual Part B and C not later than 31 March 2025. Such operator shall obtain approval/acceptance of these manuals from the CAAT in accordance with TCAR OPS Part ORO not later than 30 June 2025.

(6) To continue exercising their privileges as a CAT operator, holders of AOCs issued by the CAAT according to regulations in force before the entry into force of this TCAR OPS Air Operations regulation and TCAR OPS Parts shall:

(a) submit their Operations Manual Part D not later than 30 June 2025 and shall obtain approval by the CAAT in accordance with TCAR OPS Part ORO and Part CC, when applicable, not later than 30 September 2025.

The training programmes for flight crews, cabin crew members, flight operations officers contained in OM-D shall include the necessary training for the transition to this cover regulation and corresponding TCAR OPS Parts;

(b) have their flight crew and flight operation officer's instructors involved in training qualified in accordance the detailed requirements contained in TCAR PEL and TCAR PEL Parts; and standardised according to the approved Operations Manual Part D not later than 31 March 2026;

(7) To continue exercising their privileges as a CAT operator, holders of AOCs issued by the CAAT according to regulations in force before the entry into force of this cover regulation and corresponding TCAR OPS Parts, shall continue to comply with the applicable airworthiness and maintenance requirements.

(8) To continue exercising their privileges as a CAT operator beyond the 3 December 2026, holders of AOCs issued by the CAAT according to regulations in force before the entry into force of this cover regulation and corresponding TCAR OPS Parts shall demonstrate to the CAAT full compliance with this cover regulation and TCAR OPS Part ORO, Part CAT Part SPA, and Part CC and shall have received the corresponding TCAR OPS AOC as well as the corresponding Operations Specifications.

(9) The content of the manuals referred to in (2), (5) and (6) shall be approved or accepted only after these have been found compliant with the detailed requirements contained in this cover regulation and in TCAR OPS Part ORO, Part CAT Part SPA, and Part CC as applicable to the type of operations to be performed.

(10) By way of derogation from point (9) CAT operators shall demonstrate compliance with TCAR OPS Part CAT, CAT.GEN.MPA.170, CAT.GEN.MPA.175 (b) and (c) and CAT.GEN.MPA.215 (a) before 31 December 2028.

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Annex 01 Essential requirements for air operations

1. GENERAL

1.1. A flight must not be performed if the crew members and, as appropriate, all other operations personnel involved in its preparation and execution are not familiar with applicable laws, regulations and procedures, pertinent to the performance of their duties, prescribed for the areas to be traversed, the aerodromes planned to be used and the air navigation facilities relating thereto.

1.2. A flight must be performed in such a way that the operating procedures specified in the Flight Manual or, where required the Operations Manual, for the preparation and execution of the flight are followed.

1.3. Before every flight, the roles and duties of each crew member must be defined. The pilot in command must be responsible for the operation and safety of the aircraft and for the safety of all crew members, passengers and cargo on board.

1.4. Articles or substances, which are capable of posing a significant risk to health, safety, property or the environment, such as dangerous goods, weapons and ammunition, must not be carried on any aircraft, unless specific safety procedures and instructions are applied to mitigate the related risks.

1.5. All necessary data, documents, records and information to record the respect of the conditions specified in point 5.3 must be retained for each flight and kept available and protected against unauthorised modification for a minimum period of time compatible with the type of operation.

2. FLIGHT PREPARATION

A flight must not be commenced unless it has been ascertained by reasonable means available that all the following conditions are complied with:

2.1. adequate facilities directly required for the flight and for the safe operation of the aircraft, including communication facilities and navigation aids, are available for the execution of the flight, taking into account available Aeronautical Information Services documentation;

2.2. the crew must be familiar with and passengers informed of the location and use of relevant emergency equipment. Sufficient information, related to the operation and specific to the equipment installed, regarding emergency procedures and use of cabin safety equipment must be made available to crew and passengers;

2.3. the pilot in command must be satisfied that:

(i) the aircraft is airworthy as specified in point 6;

(ii) if required, the aircraft is duly registered and that appropriate certificates with respect thereto are aboard the aircraft;

(iii) instruments and equipment as specified in point 5 required for the execution of that flight are installed in the aircraft and are operative, unless waived by the applicable MEL or equivalent document;

(iv) the mass of the aircraft and centre of gravity location are such that the flight can be conducted within limits prescribed in the airworthiness documentation;

(v) all cabin baggage, hold luggage and cargo is properly loaded and secured; and

(vi) the aircraft operating limitations as specified in point 4 will not be exceeded at any time during the flight;

2.4. information regarding meteorological conditions for departure, destination and, where applicable, alternate aerodromes, as well as en-route conditions, must be available to the flight crew. Special attention must be given to potentially hazardous atmospheric conditions;

2.5. appropriate mitigation measures or contingency plans must be in place to deal with potentially hazardous atmospheric conditions expected to be encountered in flight;

2.6. for a flight based on visual flight rules, meteorological conditions along the route to be flown must be such as to render compliance with those flight rules possible. For a flight based on instrument flight rules a destination and where applicable alternate aerodrome(s) where the aircraft can land must be selected, taking into account in particular the forecasted meteorological conditions, the availability of air navigation services, the availability of ground facilities and the instrument flight procedures approved by the State in which the destination and/or alternate aerodrome is located;

2.7. the amount of fuel/energy for propulsion and consumables on board must be sufficient to ensure that the intended flight can be completed safely, taking into account the meteorological conditions, any element affecting the performance of the aircraft and any delays that are expected in flight. In addition, a fuel/energy reserve must be carried to provide for contingencies. Procedures for in-flight fuel/energy management must be established when relevant.

3. FLIGHT OPERATIONS

With regard to flight operations, all the following conditions must be complied with:

3.1. where relevant for the type of aircraft, during take-off and landing, and whenever deemed necessary by the pilot in command in the interest of safety, each crew member must be seated at their crew station and must use the provided restraint systems;

3.2. where relevant for the type of aircraft, all flight crew members required to be on flight deck duty must be and remain at their station, with their seatbelts fastened except en-route for physiological or operational needs;

3.3. where relevant for the type of aircraft and the type of operation, before take-off and landing, during taxiing and whenever deemed necessary in the interest of safety, the pilot in command must ensure that each passenger is properly seated and secured;

3.4. a flight must be performed in such a way that appropriate separation from other aircraft is maintained and that adequate obstacle clearance is ensured, during all phases of the flight. Such separation must at least be those required by the applicable rules of the air, as appropriate to the type of operation;

3.5. a flight must not be continued unless known conditions continue to be at least equivalent to those in point 2. Furthermore, for a flight based on instrument flight rules, an approach toward an aerodrome must not be continued below certain specified heights or beyond a certain position, if prescribed visibility criteria are not met;

3.6. in an emergency, the pilot in command must ensure that all passengers are instructed in such emergency action as may be appropriate to the circumstances;

3.7. a pilot in command must take all necessary measures so as to minimise the consequences on the flight of disruptive passenger behaviour;

3.8. an aircraft must not be taxied on the movement area of an aerodrome, or its rotor must not be turned under power, unless the person at the controls is appropriately competent;

3.9. the applicable in-flight fuel/energy management procedures must be used, when relevant.

4. AIRCRAFT PERFORMANCE AND OPERATING LIMITATIONS

4.1. An aircraft must be operated in accordance with its airworthiness documentation and all related operating procedures and limitations as expressed in its approved flight manual or equivalent documentation, as the case may be. The flight manual or equivalent documentation must be available to the crew and kept up to date for each aircraft.

4.2. Notwithstanding point 4.1, for operations with helicopters a momentary flight through the limiting height velocity envelope may be permitted, provided that safety is ensured.

4.3. The aircraft must be operated in accordance with the applicable environmental documentation.

4.4. A flight must not be commenced or continued unless the aircraft's scheduled performance, considering all factors which significantly affect its performance level, allows all phases of flight to be executed within the applicable distances/areas and obstacle clearances at the planned operating mass. Performance factors which significantly affect take-off, en-route and approach/landing are, particularly:

(i) operating procedures;

(ii) pressure altitude of the aerodrome;

(iii) weather conditions (temperature, wind, precipitation and visual range);

(iv) size, slope and condition of the take-off/landing area; and

(v) the condition of the airframe, the power plant or the systems, taking into account possible deterioration.

4.5. Such factors must 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, as appropriate to the type of operation.

5. INSTRUMENTS, DATA AND EQUIPMENT

5.1. An aircraft must be equipped with all navigation, communication and other equipment necessary for the intended flight, taking account of air traffic regulations and rules of the air applicable during any phase of the flight.

5.2. When relevant, an aircraft must be equipped with all necessary safety, medical, evacuation and survival equipment, taking account of the risks associated to the areas of operation, the routes to be flown, the flight altitude and the duration of the flight.

5.3. All data necessary for the execution of the flight by the crew must be updated and available on board the aircraft taking account of applicable air traffic regulations, rules of the air, flight altitudes and areas of operation.

6. CONTINUING AIRWORTHINESS AND ENVIRONMENTAL COMPATIBILITY OF PRODUCTS

6.1. The aircraft must not be operated unless:

(i) the aircraft is airworthy and in a condition for safe and environmentally compatible operation;

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

(iii) the airworthiness document and, if applicable, the noise certificate of the aircraft is valid; and

(iv) the maintenance of the aircraft is performed in accordance with the applicable requirements.

6.2. Before each flight or a series of consecutive flights, the aircraft must be inspected, through a pre-flight check, to determine whether it is fit for the intended flight.

6.3. The aircraft must not be operated unless it is released to service by qualified persons or organisations, after maintenance. The signed release to service must contain in particular, the basic details of the maintenance carried out.

6.4. Records necessary to demonstrate the airworthiness and environmental compatibility status of the aircraft must be kept, and protected against, unauthorised modification for the period of time corresponding to the applicable continuing airworthiness requirements, until the information contained has been superseded by new information equivalent in scope and detail but in any event not less than 24 months.

6.5. All modifications and repairs must comply with the essential requirements for airworthiness and, if applicable, the environmental compatibility of products. The substantiating data supporting compliance with the airworthiness requirements and requirements for the environmental compatibility of products must be retained and protected against unauthorised modification.

6.6. It is the responsibility of the aircraft operator to ensure that a third party performing the maintenance complies with the operator's safety and security requirements.

7. CREW MEMBERS

7.1. The number and composition of the crew must be determined taking into account:

(i) the certification limitations of the aircraft, including if applicable, the relevant emergency evacuation demonstration;

(ii) the aircraft configuration; and

(iii) the type and duration of operations.

7.2. The pilot in command must have the authority to give all commands and take any appropriate actions for the purpose of securing the operation and the safety of the aircraft and of persons and/or property carried therein.

7.3. In an emergency situation, which endangers the operation or the safety of the aircraft and/or persons on board, the pilot in command must take any action he/she considers necessary in the interest of safety. When such action involves a violation of local regulations or procedures, the pilot in command must be responsible for notifying the appropriate local authority without delay.

7.4. Without prejudice to point 9.12, when other persons are carried on board, emergency or abnormal situations may only be simulated if those persons have been duly informed and are aware of the associated risks before boarding the flight.

7.5. No crew member must allow their task achievement/decision making to deteriorate to the extent that flight safety is endangered because of the effects of fatigue, taking into account, inter alia, fatigue accumulation, sleep deprivation, number of sectors flown, night duties or time zone changes. Rest periods must provide sufficient time to enable crew members to overcome the effects of the previous duties and to be well rested by the start of the following flight duty period.

7.6. A crew member must not perform allocated duties on board an aircraft when under the influence of psychoactive substances or alcohol or when unfit due to injury, fatigue, medication, sickness or other similar causes.

8. CABIN CREW MEMBER

8.1. General

A person undertaking training to act as a cabin crew member in an aircraft must be sufficiently mature educationally, physically and mentally to acquire, retain and demonstrate the relevant theoretical knowledge and practical skills.

8.2. Training course

(i) When appropriate for the type of operations or privileges, training must be executed through training course.

(ii) A training course must meet the following conditions:

- a syllabus must be developed for each type of course; and
- the training course must comprise a breakdown of theoretical knowledge and practical instruction (including synthetic training), if applicable.

8.3. Cabin crew instructors

Instruction must be given by appropriately qualified instructors. Those instructors must:

(i) have appropriate knowledge in the field where instruction is to be given;

(ii) be capable of using appropriate instructional techniques; and

(iii) receive regular recurrent training to ensure that the instructional standards are maintained up to date.

8.4. Cabin crew evaluator

Persons responsible for examination of cabin crew must:

(i) meet the requirements for cabin crew instructors; and

(ii) be capable of assessing cabin crew performance and conducting examinations.

9. ADDITIONAL REQUIREMENTS FOR COMMERCIAL AIR TRANSPORT AND OTHER OPERATIONS SUBJECT TO A CERTIFICATION OR DECLARATION REQUIREMENT PERFORMED WITH AEROPLANES, HELICOPTERS OR TILT ROTOR AIRCRAFT

9.1. The operation must not be undertaken unless the following conditions are met:

(i) the aircraft operator must have directly or through agreements with third parties the means necessary for the scale and scope of the operations. Those means comprise but are not limited to the following: aircraft, facilities, management structure, personnel, equipment, documentation of tasks, responsibilities and procedures, access to relevant data and record keeping;

(ii) the aircraft operator must use only suitably qualified and trained personnel and implement and maintain training and checking programmes for the crew members and other relevant personnel that are necessary to ensure the currency of their certificates, ratings and qualifications;

(iii) as appropriate for the type of activity undertaken and the size of the organisation, the aircraft operator must implement and maintain a management system to ensure compliance with the essential requirements set out in this Annex, manage safety risks and aim for continuous improvement of this system;

(iv) the aircraft operator shall establish an occurrence reporting system, as part of the management system under point (iii), in order to contribute to the aim of continuous improvement of the safety. The occurrence reporting system shall be compliant with applicable regulation in force in Thailand.

9.2. The operation must only be undertaken in accordance with an aircraft operator's operations manual. Such manual must contain all necessary instructions, information and procedures for all aircraft operated and for operations personnel to perform their duties. Limitations applicable to flight time, flight duty periods and rest periods for crew members must be specified. The operations manual and its revisions must be compliant with the approved flight manual and be amended as necessary.

9.3. The aircraft operator shall establish procedures, as appropriate, so as to minimise the consequences to safe flight operations of disruptive passenger behaviour.

9.4. The aircraft operator must develop and maintain security programmes adapted to the aircraft and the type of operation including particularly:

(i) security of the flight crew compartment;

(ii) aircraft search procedure checklist;

(iii) training programmes; and

(iv) protection of electronic and computer systems to prevent intentional and non-intentional system interference and corruption.

9.5. When security measures may adversely affect the safety of operations, the risks must be assessed and appropriate procedures developed to mitigate safety risks, this may necessitate the use of specialist equipment.

9.6. The aircraft operator must designate one pilot amongst the flight crew as the pilot in command.

9.7. The prevention of fatigue must be managed through a fatigue management system. For a flight, or series of flights, such a system needs to address flight time, flight-duty periods, duty and adapted rest periods. Limitations established within the fatigue management system must take into account all relevant factors contributing to fatigue such as, in particular, number of sectors flown, time-zone crossing, sleep deprivation, disruption of circadian cycles, night hours, positioning, cumulative duty time for given periods of time, sharing of allocated tasks between crew members, and also the provision of augmented crews.

9.8. The aircraft operator must ensure that the tasks specified in point 6.1 and those described in points 6.4 and 6.5 are controlled by an organisation responsible for the continuing airworthiness management that must meet the applicable requirements.

9.9. The aircraft operator must ensure that the release to service required by point 6.3 is issued by an organisation qualified for the maintenance of products, parts and not-installed equipment. This organisation shall meet the applicable requirements.

9.10. The organisation referred to in 9.8 shall establish an organisation manual providing, for use and guidance of personnel concerned, a description of all continuing airworthiness procedures of the organisation.

9.11. A checklist system must be available for use, as applicable, by crew members in all phases of operation of the aircraft under normal, abnormal and emergency conditions and situations. Procedures must be established for any reasonably foreseeable emergency situation.

9.12. Emergency or abnormal situations must not be simulated when passengers or cargo are being carried.

สำนักงานการบินพลเรือนแห่งประเทศไทย
The Civil Aviation Authority of Thailand

Thailand Civil Aviation Regulation – Air Operations
Part Definitions of Terms Used in TCAR OPS
(TCAR OPS Part - DEF)

TCAR OPS Part - DEF

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Approved By

Suttipong Kongpool

Director General

The Civil Aviation Authority of Thailand

THAILAND CIVIL AVIATION REGULATION (TCAR)

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RECORD OF REVISIONS

Issue No.	Revision No.	Date (DD/MMM/YYYY)	Subject	Insert By (Department/ Division)
01	00	8 Dec 2023	Initial issue including (EU) No 2019/1387, (EU) No2018/1384, (EU) No 2019/1387, (EU) No 2020/2036, (EU) No 2021/1296, (EU) No 2021/2237, (EU) 2022/2203 and (EU) 2023/217, Notably, (EU) 2023/203 was not included.	OPS
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REVISION HIGHLIGHTS

Area of Change	Change Detail(s)
New Issue	New Issue

LIST OF EFFECTIVE PAGES

Change and amendment bar is placed against each paragraph affected.

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INTRODUCTION AND APPLICABILITY

In this publication the word 'must' or 'shall' is used to indicate where the Director General requires the Organisation, owner or operator to respond to and comply with, or adhere closely to, the defined requirement.

If the Organisation's/owner's/operator's response is deemed to be inadequate by the Director General, a specific requirement or restriction may be applied as a condition of the appropriate instrument to be issued under Thailand Civil Aviation Regulations.

TCAR OPS is based on the latest consolidated version of Commission Regulation (EU) No 965/2012 of 5 October 2012 laying down technical requirements and administrative procedures related to air operations, as amended up to (EU) No 2023/217. Notably, (EU) 2023/203 was not included as part of the initial issue.

TCAR OPS Part DEF is a part of the overall TCAR OPS Regulation set.

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DEFINITIONS FOR TERMS USED IN TCAR OPS PARTS

For the purpose of this Regulation, the following definitions shall apply:

(1) 'accelerate-stop distance available (ASDA)' means the length of the take-off run available plus the length of stopway, if such stopway is declared available by the State of the aerodrome and is capable of bearing the mass of the aeroplane under the prevailing operating conditions.

(2) 'acceptable means of compliance (AMC)' means non-binding standards adopted by the CAAT to illustrate means to establish compliance with the Air Navigation Act B.E.2497 and its Regulations.

(3) 'acceptance checklist' means a document used to assist in carrying out a check on the external appearance of packages of dangerous goods and their associated documents to determine that all appropriate requirements have been met with.

(4) 'acts of unlawful interference' means acts or attempted acts such as to jeopardise the safety of civil aviation and air transport, i.e.

(a) unlawful seizure of aircraft in flight,

(b) unlawful seizure of aircraft on the ground,

(c) hostage-taking on board an aircraft or on aerodromes,

(d) forcible intrusion on board an aircraft, at an airport or on the premises of an aeronautical facility,

(e) introduction on board an aircraft or at an airport of a weapon or hazardous device or material,

(f) intended for criminal purposes,

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

(5) 'adequate aerodrome' means an aerodrome on which the aircraft can be operated, taking account of the applicable performance requirements and runway characteristics.

(6) 'aerial work' means an aircraft operation in which an aircraft is used for specialized services such as agriculture, construction, photography, surveying, observation and patrol, search and rescue, aerial advertisement, etc.
In TCAR OPS, the term 'aerial work' is referred to as 'Specialised Operation'.

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

(8) 'aerodrome operating minima' means the limits of usability of an aerodrome for:

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

(b) landing in 2D instrument approach operations, expressed in terms of visibility and/or RVR, minimum descent altitude/height (MDA/H) and, if necessary, ceiling;

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

(9) 'aeroplane' means a power-driven heavier-than-air aircraft, deriving its lift in flight chiefly from aerodynamic reactions on surfaces which remain fixed under certain conditions of flight.

(10) 'aided night vision imaging system (NVIS) flight' means, in the case of NVIS operations, that portion of a visual flight rules (VFR) flight performed at night when a crew member is using night vision goggles (NVG).

(11) 'aircraft' means a machine that can derive support in the atmosphere from the reactions of the air other than the reactions of the air against the earth's surface.

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

Note. – the aircraft operating manual is part of the operations manual.

(13) 'aircraft operator' means any legal or natural person operating or proposing to operate one or more aircraft.

(14) 'aircraft tracking' means a ground-based process, established by the operator that maintains and updates, at standardised intervals, a record of the four dimensional position of individual aircraft in flight.

(15) 'aircraft tracking system' means a system that relies on aircraft tracking in order to identify abnormal flight behaviour and provide alert.

(16) 'air operator certificate (AOC)' means a certificate authorising an operator to carry out specified commercial air transport operations.

(17) 'air traffic services (ATS)' means a generic term meaning variously, flight information service, altering service, air traffic advisory service, air traffic control service area control service, approach control service or aerodrome control service.

(18) 'air taxi operation' means, for the purpose of flight time and duty time limitations, a non-scheduled on demand commercial air transport operation with an aeroplane with a maximum operational passenger seating configuration ('MOPSC') of 19 or less.

(19) 'airworthy' means the status of an aircraft, engine, propeller, or part when it conforms to its approved design and is in a condition for safe operation.

(20) 'alternate aerodrome' means an adequate aerodrome to which an aircraft may proceed when it becomes either impossible or inadvisable to proceed to or land at the aerodrome of intended landing, where the necessary services and facilities are available, where aircraft performance requirements can be met, and which is operational at the expected time of use; 'alternate aerodrome' includes the following:

(a) 'take-off alternate aerodrome': an alternate aerodrome at which an aircraft would be able to land if it becomes necessary shortly after take-off and it is not possible to use the aerodrome of departure;

(b) 'en route alternate (ERA) aerodrome': an alternate aerodrome at which an aircraft would be able to land if a diversion becomes necessary while en route;

(c) 'fuel/energy en route alternate (fuel/energy ERA) aerodrome' means an ERA aerodrome that is required at the planning stage for use in the calculation of fuel/energy;

(d) 'destination alternate aerodrome': an alternate aerodrome at which an aircraft would be able to land if it becomes either impossible or inadvisable to land at the aerodrome of intended landing;

(21) 'alternative means of compliance' means those means that propose an alternative to an existing acceptable means of compliance or those that propose new means to establish compliance with the Air Navigation Act B.E.2497 and its Regulations for which no associated AMC have been adopted by the CAAT.

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

(23) 'anti-icing', in the case of ground procedures, means a procedure that provides protection against the formation of frost or ice and accumulation of snow on treated surfaces of the aircraft for a limited period of time (hold-over time).

(24) 'Approach and landing phase – helicopters' that part of the flight from 300m (1000 ft) above the elevation of the FATO, if the flight is planned to exceed this height, or from the commencement of the descent in the other cases, to landing or to the balked landing point.

(25) 'approach procedure with vertical guidance (APV) operation' means an instrument approach which utilises lateral and vertical guidance, but does not meet the requirements established for precision approach and landing operations, with a decision height (DH) not lower than 250 ft and a runway visual range (RVR) of not less than 600 m.

(26) 'area navigation' (RNAV) means a method of navigation which permits aircraft operation on any desired flight path within the coverage of station-referenced navigation aids or within the limits of the capability of self-contained aids, or a combination of these.

(27) 'Authority' means the Director General of the Civil Aviation Authority of Thailand.

(28) 'cabin crew member' means an appropriately qualified crew member, other than a flight crew or technical crew member, who is assigned by an operator or the pilot-in-command to perform duties related to the safety of passengers and flight during operations.

(29) 'cargo aircraft' means any aircraft, other than a passenger aircraft, which is carrying goods or property.

(30) 'category A with respect to helicopters' means a multi-engined helicopter designed with engine and system isolation features specified in the applicable certification specification and capable of operations using take-off and landing data scheduled under a critical engine failure concept that assures adequate designated surface area and adequate performance capability for continued safe flight or safe rejected take-off in the event of engine failure.

(31) 'category B with respect to helicopters' means a single-engined or multi-engined helicopter that 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 unscheduled landing is assumed.

(32) 'ceiling' means the height above the ground or water of the base of the lowest layer of cloud below 6 000 m (20 000 ft) covering more than half the sky.

(33) 'certification specifications' (CS) means technical standards adopted by the CAAT indicating means to show compliance with the Air Navigation Act B.E.2497 and its Regulations and which can be used by an organisation for the purpose of certification.

(34) 'circling' means the visual phase of a circling approach operation.

(35) 'circling approach operation' means a Type A instrument approach operation to bring an aircraft into position for landing on a runway/final approach and take-off area (FATO) that is not suitably located for a straight-in approach.

(36) 'clearway' means a defined rectangular area on the ground or water under the control of the appropriate authority, selected or prepared as a suitable area over which an aeroplane may make a portion of its initial climb to a specified height.

(37) 'cloud base' means the height of the base of the lowest observed or forecast cloud element in the vicinity of an aerodrome or operating site or within a specified area of operations, normally measured above aerodrome elevation or, in the case of offshore operations, above mean sea level.

(38) 'cockpit voice recorder (CVR)' means a crash-protected flight recorder that uses a combination of microphones and other audio and digital inputs to collect and record the aural environment of the flight crew compartment and communications to, from and between the flight crew members.

(39) 'code share' means an arrangement under which an operator places its designator code on a flight operated by another operator, and sells and issues tickets for that flight.

(40) 'COMAT 'operator material carried out on an operator's aircraft for the operator's own purposes.

(41) 'combined vision system (CVS)' a system to display images from a combination of an enhanced vision system (EVS) and a synthetic vision system (SVS).

(42) 'commercial air transport operation' means an aircraft operation involving the transport of passengers, cargo or mail for remuneration or hire. This could also be interpreted as 'public transport' in this document.

(43) 'commercial operation' means any operation of an aircraft, in return for remuneration or other valuable consideration, which is available for the public or, when not made available to the public, which is performed under a contract between an operator and a customer, where the latter has no control over the operator.

(44) 'competency' means a dimension of human performance that is used to reliably predict successful performance on the job and which is manifested and observed through behaviours that mobilise the relevant knowledge, skills and attitudes to carry out activities or tasks under specified conditions.

(45) 'competency-based training' means assessment and training programmes that are characterised by a performance orientation, emphasis on standards of performance and their measurement and the development of training to the specified performance standards.

(46) 'competency framework' means a complete set of identified competencies that are developed, trained and assessed in the operator's evidence-based training programme utilising scenarios that are relevant to operations and which is wide enough to prepare the pilot for both foreseen and unforeseen threats and errors;'

(47) complex motor-powered aircraft' shall mean:

(i) an aeroplane:

- with a maximum certificated take-off mass exceeding 5 700 kg, or
- certificated for a maximum passenger seating configuration of more than nineteen, or
- certificated for operation with a minimum crew of at least two pilots, or
- equipped with (a) turbojet engine(s) or more than one turboprop engine, or

(ii) a helicopter certificated:

- for a maximum take-off mass exceeding 3 175 kg, or
- for a maximum passenger seating configuration of more than nine, or
- for operation with a minimum crew of at least two pilots, or

(iii) a tilt rotor aircraft.

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

(49) 'congested area' means in relation to a city, town or settlement, any area which is substantially used for residential, commercial or recreational purposes.

(50) 'contaminated runway' means a runway of which a significant portion of its surface area whether in isolated areas or not) within the length and width being used is covered by one or more of the substances listed under the runway surface condition descriptors.

(51) 'contingency fuel/energy' means the fuel/energy required to compensate for unforeseen factors that could have an influence on the fuel/energy consumption to the destination aerodrome.

(52) 'continuing airworthiness' the set of processes by which all aircraft comply with the applicable airworthiness requirements and remain in a safe operation throughout their operating life.

(53) 'continuous descent final approach (CDFA)' means a technique, consistent with stabilised approach procedures, for flying the final approach segment (FAS) of an instrument non-precision approach (NPA) procedure as a continuous descent, without level-off, from an altitude/height at or above the final approach fix altitude/height:

(a) for straight-in approach operations, to a point approximately 15 m (50 ft) above the landing runway threshold or the point where the flare manoeuvre begins; or

(b) for circling approach operations, until MDA/H or visual flight manoeuvre altitude/height is reached;

(54) 'converted meteorological visibility (CMV)' means a value, equivalent to an RVR, which is derived from the reported meteorological visibility.

(55) 'crew member' means a person assigned by an operator to perform duties on board an aircraft.

(56) 'critical phases of flight' in the case of aeroplanes means the take-off run, the take-off flight path, the final approach, the missed approach, the landing, including the landing roll, and any other phases of flight as determined by the pilot-in-command or commander.

(57) 'critical phases of flight' in the case of helicopters means taxiing, hovering, take-off, final approach, missed approach, the landing and any other phases of flight as determined by the pilot-in-command or commander.

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

(59) 'current fuel/energy scheme' means the approved fuel/energy scheme that is currently used by the operator.

(60) 'dangerous goods (DG)' means articles or substances which are capable of posing a hazard to health, safety, property or the environment and which are shown in the list of dangerous goods in the technical instructions or which are classified according to those instructions.

(61) 'dangerous goods accident' means an occurrence associated with and related to the transport of dangerous goods by air which results in fatal or serious injury to a person or major property or environmental damage.

(62) 'dangerous goods incident' means:

(a) an occurrence other than a dangerous goods accident associated with and related to the transport of dangerous goods by air, not necessarily occurring on board an aircraft, which results in injury to a person, property or environmental damage, fire, breakage, spillage, leakage of fluid or radiation or other evidence that the integrity of the packaging has not been maintained;

(b) any occurrence relating to the transport of dangerous goods which seriously jeopardises an aircraft or its occupants is also deemed to be a dangerous goods incident.

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

(64) 'defined point after take-off (DPATO)' means the point, within the take-off and initial climb phase, before which the helicopter's ability to continue the flight safely, with the critical engine inoperative, is not assured and a forced landing may be required.

(65) 'defined point before landing (DPBL)' means the point within the approach and landing phase, after which the helicopter's ability to continue the flight safely, with the critical engine inoperative, is not assured and a forced landing may be required.

(66) 'de-icing', in the case of ground procedures, means a procedure by which frost, ice, snow or slush is removed from an aircraft in order to provide uncontaminated surfaces.

(67) 'distance DR' means the horizontal distance that the helicopter has travelled from the end of the take-off distance available.

(68) 'dry lease agreement' means an agreement between undertakings pursuant to which the aircraft is operated under the air operator certificate (AOC) of the lessee or, in the case of commercial operations other than CAT, under the responsibility of the lessee.

(69) 'dry operating mass' means the total mass of the aircraft ready for a specific type of operation, excluding usable fuel and traffic load.

(70) 'dry runway' means a runway whose surface is free of visible moisture and not contaminated within the area intended to be used.

(71) 'EBT module' means a combination of sessions in a qualified flight simulation training device as part of the 3-year period of recurrent assessment and training.

(72) 'EDTO critical fuel' means the fuel quantity necessary to fly to an en-route alternate aerodrome, considering, at the most critical point on that route, the most limiting system failure.

(73) 'EDTO significant system' means an aeroplane system whose failure or degradation could adversely affect the safety particularly to an EDTO flight, or whose continued functioning is specifically important to the safe flight and a landing of an aeroplane during an EDTO diversion.

(74) 'EFB application' means a software application installed on an EFB host platform that provides one or more specific operational functions which support flight operations.

(75) 'EFB host platform' means the hardware equipment in which the computing capabilities and basic software reside, including the operating system and the input/output software.

(76) 'EFB system' means the hardware equipment (including any battery, connectivity provisions, input/output components) and software (including databases and the operating system) needed to support the intended EFB application(s).

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

(78) 'elevated final approach and take-off area (elevated FATO)' means a FATO that is at least 3 m above the surrounding surface.

(79) 'emergency exit' means an installed exit-type egress point from the aircraft that allows maximum opportunity for cabin and flight crew compartment evacuation within an appropriate time period and includes floor level door, window exit or any other type of exit, for instance hatch in the flight crew compartment and tail cone exit.

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

(81) 'enhanced flight vision system (EFVS)' is an electronic means to provide the flight crew with a real-time sensor-derived or enhanced display of the external scene topography (the natural or man-made features of a place or region especially in a way to show their relative positions and elevation) through the use of imaging sensors; an EFVS is integrated with a flight guidance system and is implemented on a head-up display or an equivalent display system; if an EFVS is certified according to the applicable airworthiness requirements and an operator holds the necessary specific approval (when required), then it may be used for EFVS operations and may allow operations with operational credits.

(82) 'EFVS operation' means an operation in which visibility conditions require an EFVS to be used instead of natural vision in order to perform an approach or landing, identify the required visual references or conduct a roll-out.

(83) 'EFVS 200 operation' means an operation with an operational credit in which visibility conditions require an EFVS to be used down to 200 ft above the FATO or runway threshold. From that point to land, natural vision is used. The RVR shall not be less than 550 m.

(84) 'enhanced vision system (EVS)' is an electronic means to provide the flight crew with a real-time image of the actual external scene topography (the natural or man-made features of a place or region especially in a way to show their relative positions and elevation) through the use of imaging sensors.

(85) 'enrolment' means the administrative action carried out by the operator where a pilot participates in the operator's EBT programme.

(86) 'enrolled pilot' means the pilot that participates in the EBT recurrent training programme.

(87) ‘equivalency of approaches’ means all the approaches that place an additional demand on a proficient crew regardless of whether they are used or not in the EBT modules.

(88) ‘equivalency of malfunctions’ means all the malfunctions that put a significant demand on a proficient crew regardless of whether they are used or not in the EBT modules.

(89) ‘evaluation phase’ means one of the phases of an EBT module which is a line-orientated flight scenario, representative of the operator’s environment during which there are one or more occurrences to evaluate key elements of the defined competency framework.

(90) ‘evidence-based training (EBT)’ means assessment and training based on operational data that is characterised by developing and assessing the overall capability of a pilot across a range of competencies (competency framework) rather than by measuring the performance in individual events or manoeuvres.

(91) Extended diversion time operations (EDTO) means any operation by an aeroplane with two or more turbine engines where the diversion time to an en-route alternate is greater than the threshold distance established by the Authority.

Note EDTO may be referred to as ETOPS in certain documentation when the term is used in the specific context of extended range operations with two-engined aeroplanes.

(92) Extended range operations with two-engined aeroplanes (ETOPS) means any operation by an aeroplane with two turbine engines where the diversion time to an en-route alternate is greater than the threshold distance established by the Authority.

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

(94) ‘fatigue Risk Management System (FRMS)’ a data-driven means of continuously monitoring and managing fatigue-related safety risks, based upon scientific principles and knowledge as well as operational experience that aims to ensure relevant personnel are performing at adequate levels of alertness.‘final approach segment’ that segment of an instrument approach procedure in which alignment and descent for landing are accomplished.

(95) ‘final approach and take-off area (FATO)’ means a defined area for helicopter operations, over which the final phase of the approach manoeuvre to hover or land is completed, and from which the take-off manoeuvre is commenced. In the case of helicopters operating in performance class 1, the defined area includes the rejected take-off area available.

(96) ‘final approach segment (FAS)’ means that segment of an instrument approach procedure (IAP) in which alignment and descent for landing are accomplished.

(97) ‘flight crew member’ means a licensed crew member charged with duties essential to the operation of an aircraft during a flight duty period;’

(98) ‘flight data monitoring (FDM)’ means the proactive and non-punitive use of digital flight data from routine operations to improve aviation safety. Note for the purposes of TCAR OPS, the term can be seen as synonymous with ‘flight data analysis’.

(99) 'flight data recorder (FDR)' means a crash-protected flight recorder that uses a combination of data sources to collect and record parameters that reflect the state and performance of the aircraft;'

(100) 'flight dispatcher (FD)' means a specific function or role associated with the operational control system of the aircraft operator, which indicates an advanced level of qualification. An FD is qualified to perform specific tasks for the preparation and execution of flights, including to support, brief or assist, or both, the pilot-in-command in the safe conduct of the flight. It requires an initial FOO qualification followed by operator- and advanced role-specific training.

(101) 'flight operations officer (FOO)' means a generic function or role associated with the operational control system of the aircraft operator, which indicates a standard initial qualification in compliance with ICAO Annex 1 and ICAO Docs 9868 and 10106. An FOO is qualified to perform general tasks to support the preparation and execution of a flight, which do not require advanced role-specific training.

(102) 'flight plan' means specified information provided to air traffic services units, relative to an intended flight or portion of a flight of an aircraft.

(103) 'flight recorder' means any type of recorder that is installed on the aircraft for the purpose of facilitating accident or incident safety investigations.

(104) 'flight following' means the recording in real time of departure and arrival messages by operational personnel to ensure that a flight is operating and has arrived at the destination aerodrome or an alternate aerodrome.

(105) 'flight monitoring' means, in addition to the requirements defined for flight following:

(a) operational monitoring of flights by suitably qualified operational-control personnel from departure throughout all phases of the flight;

(b) communication of all available and relevant safety information between the operational-control personnel on the ground and the flight crew; and

(c) critical assistance to the flight crew in the event of an in-flight emergency or security issue, or at the request of the flight crew.

(106) 'flight operations officer' or 'flight dispatcher' means a person designated by the operator to engage in the control and supervision of flight operations, who is suitably qualified, who supports, briefs or assists, or both, the pilot-in-command in the safe conduct of the flight;

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

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

(109) 'flight simulation training device (FSTD)' means a training device which is:

(a) in the case of aeroplanes, a full flight simulator (FFS), a flight training device (FTD), a flight and navigation procedures trainer (FNPT), or a basic instrument training device (BITD);

(b) in the case of helicopters, a full flight simulator (FFS), a flight training device (FTD) or a flight and navigation procedures trainer (FNPT).

(110) 'flight time' means:

(a) for aeroplanes, the total time from the moment an aeroplane first moves for the purpose of taking off until the moment the aeroplane finally comes to rest at the end of the flight;

(b) for helicopters, the total time between the moment a helicopter's rotor blades start turning for the purpose of taking off until the moment the helicopter finally comes to rest at the end of the flight, and the rotor blades are stopped;

(111) 'flight watch' means, in addition to all elements defined for 'flight monitoring', the active tracking of a flight by suitably qualified operational-control personnel throughout all phases of the flight to ensure that the flight is following its prescribed route without unplanned deviations, diversions or delays;

(112) 'GBAS landing system (GLS)' means an approach landing system using ground based augmented global navigation satellite system (GNSS/GBAS) information to provide guidance to the aircraft based on its lateral and vertical GNSS position. It uses geometric altitude reference for its final approach slope.

(113) 'go-around' means a transition from an approach operation to a stabilised climb. This includes manoeuvres conducted at or above the MDA/H or DA/H, or below the DA/H (balked landings).

(114) 'ground emergency service personnel' means any ground emergency service personnel (such as policemen, firemen, etc.) involved with helicopter emergency medical services (HEMSs) and whose tasks are to any extent pertinent to helicopter operations;

(115) 'grounding' means the formal prohibition of an aircraft to take-off and the taking of such steps as are necessary to detain it;

(116) 'head-up display landing system (HUDLS)' means the total airborne system which provides head-up guidance to the pilot to enable the pilot to either control the aircraft or to monitor the autopilot during take-off (if applicable), approach and landing (and roll-out if applicable), or go-around. It includes all the sensors, computers, power supplies, indications and controls.

(117) 'helicopter' means a heavier-than-air aircraft supported in flight chiefly by the reactions of the air on one or more power-driven rotors on substantially vertical axes;

(118) 'helicopter hoist operation (HHO) crew member' means a technical crew member who performs assigned duties relating to the operation of a hoist;

(119) 'helideck' means a FATO located on a floating or fixed offshore structure;

(120) 'heliport' an aerodrome or a defined area on a structure intended to be used wholly or in part for the arrival, departure and surface movement of helicopters;

(121) 'heliport operating minima' the limits of useability of a heliport for:

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

(b) landing in 2D instrument approach operations, expressed in terms of visibility and/or runway visual range and decision altitude/height (DA/H) as appropriate to the type and/or category of operation

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

(122) 'HEMS crew member' means a technical crew member who is assigned to a HEMS flight for the purpose of attending to any person in need of medical assistance carried in the helicopter and assisting the pilot during the mission;

(123) 'HEMS flight' means a flight by a helicopter operating under a HEMS approval, the purpose of which is to facilitate emergency medical assistance, where immediate and rapid transportation is essential, by carrying:

(a) medical personnel;

(b) medical supplies (equipment, blood, organs, drugs); or

(c) ill or injured persons and other persons directly involved;

(124) 'HEMS operating base' means an aerodrome at which the HEMS crew members and the HEMS helicopter may be on stand-by for HEMS operations;

(125) 'HEMS operating site' means a site selected by the commander during a HEMS flight for helicopter hoist operations, landing and take-off;

(126) 'high risk commercial specialised operation' means any commercial specialised aircraft operation carried out over an area where the safety of third parties on the ground is likely to be endangered in the event of an emergency, or, as determined by the CAAT of the place where the operation is conducted, any commercial specialised aircraft operation that, due to its specific nature and the local environment in which it is conducted, poses a high risk, in particular to third parties on the ground;

(127) 'HHO flight' means a flight by a helicopter operating under an HHO approval, the purpose of which is to facilitate the transfer of persons and/or cargo by means of a helicopter hoist;

(128) 'HHO offshore' means a flight by a helicopter operating under an HHO approval, the purpose of which is to facilitate the transfer of persons and/or cargo by means of a helicopter hoist from or to a vessel or structure in a sea area or to the sea itself;

(129) 'HHO passenger' means a person who is to be transferred by means of a helicopter hoist;

(130) 'HHO site' means a specified area at which a helicopter performs a hoist transfer;

(131) 'hold-over time (HoT)' means the estimated time the anti-icing fluid will prevent the formation of ice and frost and the accumulation of snow on the protected (treated) surfaces of an aeroplane;

(132) 'hostile environment' means:

(a) an area in which:

(i) a safe forced landing cannot be accomplished because the surface is inadequate; or

(ii) the helicopter occupants cannot be adequately protected from the elements; or

(iii) search and rescue response/capability are not provided consistent with anticipated exposure; or

(iv) there is an unacceptable risk of endangering persons or property on the ground;

(b) in any case, the following areas:

(i) for overwater operations, the open sea area north of 45 N and south of 45 S, unless any part is designated as non-hostile by the responsible authority of the State in which the operations take place; and

(ii) those parts of a congested area without adequate safe forced landing areas; 'human-machine interface' (HMI)' means a component of certain devices that is capable of handling human-machine interactions. The interface consists of hardware and software that allow user inputs to be interpreted and processed by machines or systems that, in turn, provide the required results to the user;

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

(134) 'Human performance' Human capabilities and limitations which have an impact on the safety and efficiency of aeronautical operations;

(135) 'in-seat instruction' means a technique used in the manoeuvres training phase or the scenario-based training phase, where the instructors can:

(a) provide simple instructions to one pilot; or

(b) perform predetermined exercises acting, in a pilot seat, as pilot flying (PF) or pilot monitoring (PM) for:

(i) the demonstration of techniques; and/or

(ii) triggering the other pilot to intervene or interact;

(136) 'instructor concordance'means the consistency or stability of scores between different EBT instructors which gives a score (or scores) of how much homogeneity, or consensus, there is in the ratings given by instructors (raters);

(137) 'instrument approach operation' means an approach and landing using instruments for navigation guidance based on an instrument approach procedure (IAP). There are two methods for executing instrument approach operations:

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

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

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

(a) non-precision approach (NPA) procedure, which means an IAP designed for 2D instrument approach operations Type A;

(b) approach procedure with vertical guidance (APV) means a performance-based navigation (PBN) IAP designed for 3D instrument approach operations Type A;

(c) *precision approach (PA) procedure means an IAP based on navigation systems designed for 3D instrument approach operations Type A or B*.

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

(140) 'Integrated survival suit' a survival suit which meets the combined requirements of the survival suit and life jacket

(141) 'landing decision point (LDP)' means the point used in determining landing performance from which, an engine failure having been recognised at this point, the landing may be safely continued or a balked landing initiated;

(142) 'landing distance available (LDA)' means the length of the runway which is declared available by the State of the aerodrome and suitable for the ground run of an aeroplane landing;

(143) 'landing distance at time of arrival (LDTA)' means a landing distance that is achievable in normal operations based on landing performance data and associated procedures determined for the prevailing conditions at the time of landing;

(144) 'landplane' means a fixed wing aircraft which is designed for taking off and landing on land and includes amphibians operated as landplanes;

(145) 'line-orientated flight scenario' means the assessment and training involving a realistic, 'real-time', full mission simulation of scenarios that are representative of line operations;'local helicopter operation' means a commercial air transport operation of helicopters with a maximum certified take-off mass (MCTOM) over 3 175 kg and a maximum operational passenger seating configuration (MOPSC) of nine or less, by day, over routes navigated by reference to visual landmarks, conducted within a local and defined geographical area specified in the operations manual;

(146) 'line check' means a check conducted by the operator and completed by the pilot or the technical crew member to demonstrate competence in carrying out normal line operations described in the operations manual.

(147) 'local helicopter operation (LHO)' means a commercial air transport operation of helicopters with a maximum certified take-off mass (MCTOM) over 3 175kg and a maximum operational passenger seating configuration (MOPSC) of nine or less, by day, over routes navigated by reference to visual landmarks, conducted within a local and defined geographical area specified in the operations manual.

(148) 'low-visibility operations (LVOs)' means approach or take-off operations on a runway with a runway visual range less than 550 m or with a decision height less than 200 ft.

(149) 'low-visibility take-off (LVTO)' means a take-off with an RVR less than 550 m.

(150) 'manoeuvres training phase' means a phase of an EBT module during which, according to aircraft generation, crews have time to practise and improve performance in largely psychomotor skill-based exercises by achieving a prescribed flight path or performing a prescribed event to a prescribed outcome;

(151) 'maintenance check flight ('MCF')' means a flight of an aircraft with an airworthiness certificate or with a permit to fly which is carried out for troubleshooting purposes or to check the functioning of one or more systems, parts or appliances after maintenance, if the functioning of the systems, parts or appliances cannot be established during ground checks and which is carried out in any of the following situations:

(a) as required by the aircraft maintenance manual ("AMM") or any other maintenance data issued by a design approval holder being responsible for the continuing airworthiness of the aircraft;

(b) after maintenance, as required by the operator or proposed by the organisation responsible for the continuing airworthiness of the aircraft;

(c) as requested by the maintenance organisation for verification of a successful defect rectification;

(d) to assist with fault isolation or troubleshooting.

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

(153) 'Maximum diversion time' means maximum allowable range, expressed in time, from a point on a route to an en-route alternate aerodrome;

(154) 'Maximum mass' means maximum certificated take-off mass.

(155) 'maximum operational passenger seating configuration (MOPSC)' means the maximum passenger seating capacity of an individual aircraft, excluding crew seats, established for operational purposes and specified in the operations manual. Taking as a baseline the maximum passenger seating configuration established during the certification process conducted for the type certificate (TC), supplemental type certificate (STC) or change to the TC or STC as relevant to the individual aircraft, the MOPSC may establish an equal or lower number of seats, depending on the operational constraints;

(156) 'medical passenger' means a medical person carried in a helicopter during a HEMS flight, including but not limited to doctors, nurses and paramedics;

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

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

(159) 'minor' means a person who has not attained the age of majority as determined under the law applicable to the person.

(160) 'minor failure condition' means a failure condition that would not significantly reduce aircraft safety, and which involves flight crew actions that are well within their capabilities;

(161) 'misuse of substances' means the use of one or more psychoactive substances by flight crew, cabin crew members and other safety-sensitive personnel in a way that: (a) constitutes a direct hazard to the user or endangers the lives, health or welfare of others, and/or (b) causes or worsens an occupational, social, mental or physical problem or disorder;

(162) 'mixed EBT programme' means an operator's recurrent training and checking programme as per ORO.FC.230, a portion of which is dedicated to the application of EBT but which does not replace proficiency checks as per Appendix 9 to TCAR PEL Part FCL;

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

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

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

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

(164) 'night' means the period between the end of evening civil twilight and the beginning of morning civil twilight or such other period between sunset and sunrise as may be prescribed by the appropriate authority, as defined by the Member State;

(165) 'night vision goggles (NVG)' means a head-mounted, binocular, light intensification appliance that enhances the ability to maintain visual surface references at night;

(166) 'night vision imaging system (NVIS)' means the integration of all elements required to successfully and safely use NVGs while operating a helicopter. The system includes as a minimum: NVGs, NVIS lighting, helicopter components, training and continuing airworthiness;

(167) 'non-hostile environment' means an environment in which:

(a) a safe forced landing can be accomplished;

(b) the helicopter occupants can be protected from the elements; and

(c) search and rescue response/capability is provided consistent with the anticipated exposure.

In any case, those parts of a congested area with adequate safe forced landing areas shall be considered non-hostile;

(168) 'non-precision approach (NPA) operation' means an instrument approach with a minimum descent height (MDH), or DH when flying a CDFA technique, not lower than 250 ft and an RVR/CMV of not less than 750 m for aeroplanes and 600 m for helicopters;

(169) 'NVIS crew member' means a technical crew member assigned to an NVIS flight;

(170) 'NVIS flight' means a flight under night visual meteorological conditions (VMC) with the flight crew using NVGs in a helicopter operating under an NVIS approval;

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

(172) 'offshore operation' means a helicopter operation that has a substantial proportion of any flight conducted over open sea areas to or from an offshore location. Such operations include, but are not limited to, support of offshore oil, gas and mineral exploitation and sea-pilot transfer;

(173) 'offshore location' means a facility intended to be used for helicopter operations on a fixed or floating offshore structure or a vessel;

(174) 'open sea area' means the area of water to seaward of the coastline;

(175) 'operating site' means a site, other than an aerodrome, selected by the operator or pilot-in-command or commander for landing, take-off and/or external load operations;

(176) 'operation in performance class 1' means an operation that, in the event of failure of the critical engine, the helicopter is able to land within the rejected take-off distance available or safely continue the flight to an appropriate landing area, depending on when the failure occurs;

(177) 'operation in performance class 2' means an operation that, in the event of failure of the critical engine, performance is available to enable the helicopter to safely continue the flight, except when the failure occurs early during the take-off manoeuvre or late in the landing manoeuvre, in which cases a forced landing may be required;

(178) 'operation in performance class 3' means an operation that, in the event of an engine failure at any time during the flight, a forced landing may be required in a multi-engined helicopter and will be required in a single-engined helicopter;

(179) 'operational control' means the responsibility for the initiation, continuation, termination or diversion of a flight in the interest of safety;

(180) 'operational credit' means a credit for operations with an advanced aircraft enabling lower aerodrome operating minima than would normally be established by the operator for a basic aircraft, based upon the performance of advanced aircraft systems utilising the available external infrastructure. Lower operating minima may include a lower decision height/altitude or minimum descent height/altitude, reduced visibility requirements or reduced ground facilities or a combination of these.

(181) 'operational flight plan' means the operator's plan for the safe conduct of the flight based on considerations of aeroplane performance, other operating limitations and relevant expected conditions on the route to be followed and at the aerodromes concerned;

(182) 'operator proficiency check' means a check conducted by the operator and completed by the pilot or the technical crew member to demonstrate competence in carrying out normal, abnormal and emergency procedures.

(183) 'Operations specifications' means the authorisations, conditions and limitations associated with the air operator certificate and subject to the conditions in the operations manual;

(184) Passenger classification: For the purpose of passenger classification:

(a) 'adult' means a person of an age of 12 years and above;

(b) 'child/children' means persons who are of an age of two years and above but who are less than 12 years of age;

(c) 'infant' means a person under the age of two years;

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

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

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

(188) 'performance class A aeroplanes' means multi-engined aeroplanes powered by turbo-propeller engines with an MOPSC of more than nine or a maximum take-off mass exceeding 5 700 kg, and all multi-engined turbo-jet powered aeroplanes;

(189) 'performance class B aeroplanes' means aeroplanes powered by propeller engines with an MOPSC of nine or less and a maximum take-off mass of 5 700 kg or less;

(190) 'performance class C aeroplanes' means aeroplanes powered by reciprocating engines with an MOPSC of more than nine or a maximum take-off mass exceeding 5 700 kg;

(191) 'personnel-carrying device system (PCDS)' means a system including one or more devices that is either attached to a hoist or cargo hook or mounted to the rotorcraft airframe during human external cargo (HEC) or helicopter hoist operations (HHO). The devices have the structural capability and features needed to transport occupants external to the helicopter e.g. a life

safety harness with or without a quick release and strop with a connector ring, a rigid basket or a cage;

(192) 'pilot-in-command' means the pilot designated as being in command and charged with the safe conduct of the flight. For the purpose of commercial air transport operations, the 'pilot-in-command' shall be termed the 'commander';

(193) 'point of no return' means the last possible geographic point at which an aircraft can proceed to the destination aerodrome as well as to an available en-route alternate for a given flight

(194) 'portable EFB' means a portable EFB host platform, used on the flight deck, which is not part of the configuration of the certified aircraft

(195) 'portable electronic device (PED)' means any kind of electronic device, typically but not limited to consumer electronics, brought on board the aircraft by crew members, passengers, or as part of the cargo, that is not included in the configuration of the certified aircraft. It includes all equipment that is able to consume electrical energy. The electrical energy can be provided from internal sources such as batteries (chargeable or non-rechargeable) or the devices may also be connected to specific aircraft power sources;

(196) 'principal place of business' means the head office or registered office of the organisation within which the principal financial functions and operational control of the activities referred to in this Regulation are exercised;

(197) 'prioritisation of ramp inspections' means the dedication of an appropriate portion of the total number of ramp inspections conducted by or on behalf of The CAAT on an annual basis as provided in Part Ramp of this Regulation;

(198) 'proficient' means having demonstrated the necessary skills, knowledge and attitudes that are required to perform any defined tasks to the prescribed standard;

(199) 'psychoactive substances' means alcohol, opioids, cannabinoids, sedatives and hypnotics, cocaine, other psychostimulants, hallucinogens, and volatile solvents, with the exception of caffeine and tobacco;

(200) 'public interest site (PIS)' means a site used exclusively for operations in the public interest;

(201) 'ramp inspection' means the inspection of aircraft, of flight and cabin crew qualifications and of flight documentation in order to verify the compliance with the applicable requirements;

(202) 'rectification interval' means a limitation on the duration of operations with inoperative equipment;

(203) 'rejected take-off distance available (RTODAH)' means the length of the final approach and take-off area declared available and suitable for helicopters operated in performance class 1 to complete a rejected take-off;

(204) 'rejected take-off distance required (RTODRH)' means the horizontal distance required from the start of the take-off to the point where the helicopter comes to a full stop following an engine failure and rejection of the take-off at the take-off decision point;

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

(206) 'required navigation performance (RNP) specification' means a navigation specification for PBN operations which includes a requirement for on-board navigation performance monitoring and alerting;

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

(208) 'runway condition report (RCR)' means a comprehensive standardised report relating to the conditions of the runway surface and their effect on the aeroplane landing and take-off performance, described by means of runway conditions code;

(209) 'runway visual range (RVR)' means the range over which the pilot of an aircraft on the centre line of a runway can see the runway surface markings or the lights delineating the runway or identifying its centre line;

(210) safe landing' means, in the context of the fuel/energy policy or fuel/energy schemes, a landing at an adequate aerodrome or operating site with no less than the final reserve fuel/energy remaining and in compliance with the applicable operational procedures and aerodrome operating minima.

(211) 'safe forced landing' means an unavoidable landing or ditching with a reasonable expectancy of no injuries to persons in the aircraft or on the surface;

(212) 'safety management system (SMS)' A systematic approach to managing safety, including the necessary organisational structures, accountability, responsibilities, policies and procedures;

(213) 'safety-sensitive personnel' means persons who might endanger aviation safety if they perform their duties and functions improperly, including flight crew and cabin crew members, aircraft maintenance personnel and air traffic controllers;

(214) 'scenario-based training phase' means a phase of an EBT module which focuses on the development of competencies, whilst the pilot is trained to mitigate the most critical risks identified for the aircraft generation. It should include the management of specific operator's threats and errors in a real-time line- orientated environment;"

(215) 'seaplane' means a fixed wing aircraft which is designed for taking off and landing on water and includes amphibians operated as seaplanes;

(216) 'separate runways' means runways at the same aerodrome that are separate landing surfaces. These runways may overlay or cross in such a way that if one of the runways is blocked, it will not prevent the planned type of operations on the other runway. Each runway shall have a separate approach procedure based on a separate navigation aid;

(217) Series of flights are consecutive flights that:

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

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

(218) 'special VFR flight' means a VFR flight cleared by air traffic control to operate within a control zone in meteorological conditions below VMC;

(219) 'specialised operation' means any operation other than commercial air transport where the aircraft is used for specialised activities such as agriculture, construction, photography, surveying, observation and patrol, aerial advertisement, maintenance check flights, it may also be called Aerial Work in other regulations;

(220) 'specially prepared winter runway' means a runway with a dry frozen surface of compacted snow or ice which has been treated with sand or grit or has been mechanically treated to improve runway friction;';

(221) 'simple personnel carrying device system (simple 'PCDS')' means a PCDS that complies with the following conditions:

(a) is designed to restrain no more than a single person (for instance, hoist or cargo hook operator, task specialist or photographer) inside the cabin, or to restrain no more than two persons outside the cabin;

(b) is not a rigid structure such as a cage, a platform or a basket;

(222) 'stabilised approach (SAp)' means an approach that is flown in a controlled and appropriate manner in terms of configuration, energy and control of the flight path from a pre-determined point or altitude/height down to a point 50 ft above the threshold or the point where the flare manoeuvre is initiated if higher;

(223) 'State of the Aerodrome' means The State in whose territory the aerodrome is located;

(224) 'sterile flight crew compartment' means any period of time when the flight crew members are not disturbed or distracted, except for matters critical to the safe operation of the aircraft or the safety of the occupants;

(225) 'synthetic vision system (SVS)' means a system to display data-derived synthetic images of the external scene from the perspective of the flight deck;

(226) 'take-off decision point (TDP)' means the point used in determining take-off performance from which, an engine failure having been recognised at this point, either a rejected take-off may be made or a take-off safely continued;

(227) 'take-off distance available (TODA)' in the case of aeroplanes means the length of the take-off run available plus the length of the clearway, if provided;

(228) 'take-off distance available (TODAH)' in the case of helicopters means the length of the final approach and take-off area plus, if provided, the length of helicopter clearway declared available and suitable for helicopters to complete the take-off;

(229) 'take-off distance required (TODRH)' in the case of helicopters means the horizontal distance required from the start of the take-off to the point at which take-off safety speed (V_{TOSS}), a selected height and a positive climb gradient are achieved, following failure of the critical engine being recognised at the TDP, the remaining engines operating within approved operating limits;

(230) 'take-off flight path' means the vertical and horizontal path, with the critical engine inoperative, from a specified point in the take-off for aeroplanes to 1 500 ft above the surface and for helicopters to 1 000 ft above the surface;

(231) 'take-off mass' means the mass including everything and everyone carried at the commencement of the take-off for helicopters and take-off run for aeroplanes;

(232) 'take-off run available (TORA)' means the length of runway that is declared available by the State of the aerodrome and suitable for the ground run of an aeroplane taking off;

(233) 'target level of safety (TLS)' a generic term representing the level of risk which is considered acceptable in particular circumstances;

(234) 'task specialist' means a person assigned by the operator or a third party, or acting as an undertaking, who performs tasks on the ground directly associated with a specialised task or performs specialised tasks on board or from the aircraft;

(235) 'technical crew member' means a crew member in commercial air transport HEMS, HHO or NVIS operations other than a flight or cabin crew member, assigned by the operator to duties in the aircraft or on the ground for the purpose of assisting the pilot during HEMS, HHO or NVIS operations, which may require the operation of specialised on-board equipment;

(236) 'technical instructions (TI)' means the latest effective edition of the 'Technical instructions for the safe transport of dangerous goods by air', including the supplement and any addenda, approved and published by the International Civil Aviation Organisation;

(237) 'total vertical error (TVE)' the vertical geometric difference between the actual pressure altitude flown by an aircraft and its assigned pressure altitude (flight level)

(238) 'traffic load' means the total mass of passengers, baggage, cargo and carry-on specialist equipment, including any ballast;

(239) 'type A EFB application'' means an EFB application whose malfunction or misuse has no safety effect

(240) 'type B EFB application' means an EFB application:

(a) whose malfunction or misuse is classified as minor failure condition or below; and

(b) which neither replaces nor duplicates any system or functionality required by airworthiness regulations, airspace requirements, or operational rules;

(241) 'training to proficiency' means training designed to achieve end-state performance objectives, providing sufficient assurance that the trained individual is capable of consistently carrying out specific tasks safely and effectively.

(242) 'Type A instrument approach operation' means an instrument approach operation with an MDH or a DH at or above 250 ft.

(243) 'Type B instrument approach operation' means an operation with a DH below 250 ft. Type B instrument approach operations are categorised as:

(a) Category I (CAT I): a DH not lower than 200 ft and with either a visibility not less than 800 m or an RVR not less than 550 m;

(b) Category II (CAT II): a DH lower than 200 ft but not lower than 100 ft, and an RVR not less than 300 m;

(c) Category III (CAT III): a DH lower than 100 ft or no DH, and an RVR less than 300 m or no RVR limitation.

(244) 'unaided NVIS flight' means, in the case of NVIS operations, that portion of a VFR flight performed at night when a crew member is not using NVG;

(245) 'undertaking' means any natural or legal person, whether profit-making or not, or any official body whether having its own personality or not;

(246) 'V_1' means the maximum speed in the take-off at which the pilot must take the first action to stop the aeroplane within the accelerate-stop distance. V_1 also means the minimum speed in the take-off, following a failure of the critical engine at V_{EF}, at which the pilot can continue the take-off and achieve the required height above the take-off surface within the take-off distance;

(247) 'V_{EF}' means the speed at which the critical engine is assumed to fail during take-off;

(248) 'visibility (VIS)' means visibility for aeronautical purposes, which is the greater of:

(a) the greatest distance at which a black object of suitable dimensions, situated near the ground, can be seen and recognised when observed against a bright background; and

(b) the greatest distance at which lights in the vicinity of 1 000 candelas can be seen and identified against an unlit background.

(249) 'visual approach operation' means an approach operation by an IFR flight when either a part or all parts of an IAP is (are) not completed and the approach operation is executed with visual reference to terrain.

(250) 'visual meteorological conditions (VMC)' means meteorological conditions expressed in terms of visibility, distance from cloud, and ceiling, equal to or better than the specified minima;

(251) 'weather-permissible aerodrome' means an adequate aerodrome where, for the anticipated time of use, meteorological reports, or forecasts, or any combination thereof, indicate that the meteorological conditions will be at or above the required aerodrome operating minima, and the runway surface condition reports indicate that a safe landing will be possible.

(252) 'wet lease agreement' means an agreement:

- in the case of CAT operations, between air carriers pursuant to which the aircraft is operated under the AOC of the lessor; or
- in the case of commercial operations other than CAT, between operators pursuant to which the aircraft is operated under the responsibility of the lessor;

(253) 'wet runway' means a runway whose surface is covered by any visible dampness or water up to and including 3 mm deep within the area intended to be used;

สำนักงานการบินพลเรือนแห่งประเทศไทย
The Civil Aviation Authority of Thailand

Thailand Civil Aviation Regulation – Air Operations

Part Organisation Requirements for Air Operations

(TCAR OPS Part - ORO)

TCAR OPS Part - ORO
Issue: 02
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Date 20 December 2024

Approved By

Suttipong Kongpool
Director General
The Civil Aviation Authority of Thailand

THAILAND CIVIL AVIATION REGULATION (TCAR)

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RECORD OF REVISIONS

Issue No.	Revision No.	Date (DD/MMM/YYYY)	Subject	Insert By (Department/ Division)
01	00	8 Dec 2023	Initial issue including (EU) No 2019/1387, (EU) No2018/1384, (EU) No 2019/1387, (EU) No 2020/2036, (EU) No 2021/1296, (EU) No 2021/2237, (EU) 2022/2203 and (EU) 2023/217, Notably, (EU) 2023/203 was not included.	OPS
02	00	20 Dec 2024	New Issue	OPS

REVISION HIGHLIGHTS

Area of Change	Change Detail(s)
New Issue	New Issue

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Change and amendment bar is placed against each paragraph affected.

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INTRODUCTION AND APPLICABILITY

In this publication the word 'must' or 'shall' is used to indicate where the Director General requires the Organisation, owner or operator to respond to and comply with, or adhere closely to, the defined requirement.

If the Organisation's/owner's/operator's response is deemed to be inadequate by the Director General, a specific requirement or restriction may be applied as a condition of the appropriate instrument to be issued under Thailand Civil Aviation Regulations.

TCAR OPS is based on the latest consolidated version of Commission Regulation (EU) No 965/2012 of 5 October 2012 laying down technical requirements and administrative procedures related to air operations, as amended up to (EU) No 2023/217. Notably, (EU) 2023/203 was not included as part of the initial issue.

TCAR OPS Part ORO is a part of the overall TCAR OPS Regulation set.

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TABLE OF CONTENT

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SUBPART GEN: GENERAL REQUIREMENTS

SECTION I General

ORO.GEN.005 - Scope

This Subpart establishes the requirements to be followed by a Kingdom of Thailand Air Operator conducting the following operational activity:

(a) commercial air transport operations (CAT),

(b) commercial specialised operations

(c) non-commercial operations with complex-motor powered aircraft;

(d) non-commercial specialised operations with complex motor-powered aircraft.

ORO.GEN.105 – The competent authority

For the purpose of TCAR OPS Part ORO, the CAAT is the competent authority exercising oversight, over operators subject to a certification or authorisation obligation or specialised operation authorisation having their principal place of business in the Kingdom of Thailand.

ORO.GEN.110 - Operator responsibilities

(a) The operator is responsible for the operation of the aircraft in accordance with the air operations requirements set out in the Air Navigation Act B.E.2497, the relevant requirements of TCAR OPS Part ORO and its air operator certificate (AOC), specialised operation authorisation (SPO authorisation) or other authorisation, as it is required.

(b) Every flight shall be conducted in accordance with the provisions of the operations manual.

(c) The operator shall establish and maintain a system for exercising operational control over any flight operated under the terms of its certificate, SPO authorisation or other authorisation.

(d) The operator shall ensure that its aircraft are equipped and its crews are qualified as required for the area and type of operation.

(e) The operator shall ensure that all personnel assigned to, or directly involved in, ground and flight operations are properly instructed, have demonstrated their abilities in their particular duties and are aware of their responsibilities and the relationship of such duties to the operation as a whole.

(f) The operator shall establish procedures and instructions for the safe operation of each aircraft type, containing ground staff and crew member duties and responsibilities, for all types of operation on the ground and in flight. Those procedures and instructions shall not require crew members to perform any activities during critical phases of flight other than those required for the safe operation of the aircraft. Procedures and instructions for a sterile flight crew compartment shall also be included.

(g) The operator shall ensure that all personnel are made aware that they shall comply with the laws, regulations and procedures of those States in which operations are conducted and that are pertinent to the performance of their duties.

(h) The operator shall establish a checklist for each aircraft type to be used by crew members in all phases of flight under normal, abnormal and emergency conditions in order to ensure that

the operating procedures in the operations manual are followed. The design and the usage of checklists shall observe human factors principles and take into account the latest relevant documentation from the design approval holder.

(i) The operator shall specify flight planning procedures to provide for the safe conduct of the flight based on considerations of aircraft performance, other operating limitations and relevant expected conditions on the route to be followed and at the aerodromes or operating sites concerned. These procedures shall be included in the operations manual.

(j) The operator shall establish and maintain dangerous goods training programmes for personnel as required by the technical instructions. Such training programmes shall be commensurate with the responsibilities of personnel. Training programmes of operators performing CAT, whether they transport dangerous goods or not, and of operators conducting commercial or non-commercial specialised operations or non-commercial operations with complex motor-powered aircraft shall be subject to review and approval by the CAAT.

(k) Notwithstanding point (j), operators conducting commercial operations with either of the following aircraft shall ensure that the flight crew has received an appropriate dangerous goods training or briefing, so as to enable them to recognise undeclared dangerous goods brought on-board by passengers or as cargo:

(1) a single-engined propeller-driven aeroplane having a maximum certified take-off mass of 5 700 kg or less and a MOPSC of 5 or less, operated in a flight taking off and landing at the same aerodrome or operating site, under VFR by day; or

(2) an other-than complex motor-powered helicopter, single-engined, with a MOPSC of 5 or less, operated in a flight taking off and landing at the same aerodrome or operating site, under VFR by day.

(l) The operator shall ensure that the ground handling operations for its aircraft is compliance with CAAT Guidance Material for Ground Handling Operations (GOPS).

ORO.GEN.115 - Application for an AOC

(a) The application for an air operator certificate or an amendment to an existing certificate shall be made in a form and manner established by the CAAT, taking into account Sections 41/112, 41/113, 41/114, 41/115 of the Air Navigation Act B.E 2497, Kingdom of Thailand Civil Aviation Regulations and the CAAT internal oversight, certification and enforcement procedures.

(b) Applicants for an initial certificate shall provide the CAAT with documentation demonstrating how they will comply with the requirements established in Sections 41/112, 41/113, 41/114, 41/115, 41/117 and the air operations of the Air Navigation Act B.E 2497 and Kingdom of Thailand Civil Aviation Regulations. The documentation that is submitted to the CAAT by the applicant shall include a procedure describing how changes not requiring prior approval will be managed and notified to the CAAT.

ORO.GEN.120 - Means of compliance

(a) Purpose

With a view to ensuring uniformity in the application of common requirements, it is essential that common standards be applied. Consequently, the CAAT, when necessary and practicable, will develop Acceptable Means of Compliance and Guidance Material to TCAR OPS Parts to facilitate the necessary regulatory uniformity. These AMCs may be used to demonstrate compliance with the provisions of corresponding provisions contained in TCAR OPS.

(b) Definitions

Acceptable means of compliance (AMC) are non-binding standards adopted by the CAAT to illustrate means to establish compliance with requirements of the Regulation.
Alternative means of compliance (AMoC) are those means that propose an alternative to an existing AMC or those that propose new means to establish compliance with requirements of the Regulation for which no associated AMC have been adopted by the CAAT.

(c) Acceptable Means of Compliance

The AMCs to TCAR OPS Parts issued by the CAAT shall neither introduce new requirements nor alleviate the requirements of the corresponding TCARs.
Each AMC shall identify clearly the provisions of the TCAR OPS it illustrates.
When the acceptable means of compliance to TCAR OPS issued by the CAAT are used, the related requirements of the TCAR OPS shall be considered met without further demonstration.

(d) Alternative means of compliance

Alternative means of compliance (AMoC) to those published by the CAAT may be used by an organisation to establish compliance with the requirements of TCAR OPS Parts.
When an organisation, wishes to use an AMoC to the AMCs to TCAR OPS, it shall, prior to implementing it, provide the CAAT with a full description of the proposed AMoC.
The description shall include any revisions to manuals or procedures that may be relevant, as well as an assessment demonstrating that the corresponding requirements are met.
The organisation may implement these AMoCs subject to prior formal approval by the CAAT and upon receipt of the notification of approval.

(e) Approval of AMCs and AMoC.

The CAAT OPS department shall be responsible for developing, approving and publishing AMCs to TCAR OPS Parts.
The CAAT OPS department shall be responsible for assessing AMoCs and, when the assessment is satisfactory, for approving AMoCs to TCAR OPS submitted by the organisations.
The CAAT OPS department shall publish any newly approved AMCs.

ORO.GEN.125 - Terms of approval and privileges of an AOC holder

A certified operator shall comply with the scope and privileges defined in the operations specifications attached to the operator's certificate.

ORO.GEN.130 - Changes related to an AOC holder

(a) Any change affecting:

(1) the scope of the certificate or the operations specifications of an operator; or

(2) any of the elements of the operator's management system as required in ORO.GEN.200(a)(1)(i) and (a)(1)(ii),

shall require prior approval by the CAAT.

(b) For any changes requiring prior approval in accordance with the Air Navigation Act B.E 2497 and Kingdom of Thailand Civil Aviation Regulations, the operator shall apply for and obtain an approval issued by the CAAT. The application shall be submitted before any such change takes place, in order to enable the CAAT to determine continued compliance with the Air Navigation Act B.E 2497 and Kingdom of Thailand Civil Aviation Regulations, and to amend, if necessary, the operator certificate and related terms of approval attached to it.

The operator shall provide the CAAT with any relevant documentation.

The change shall only be implemented upon receipt of formal approval by the CAAT in accordance with the CAAT internal oversight, certification and enforcement procedures.

The operator shall operate under the conditions prescribed by the CAAT during such changes, as applicable.

(c) All changes not requiring prior approval shall be managed and notified to the CAAT as defined in the operator procedure approved by the CAAT.

(d) In case of introduction of the new aircraft type in the company, while the Authority does not have type-rated officer or have type-rated officer but not adequately meet the overall number of such aircraft type, the AOC holder shall provide aircraft type training for the new aircraft type to the Authority's Officers, at the expense of the AOC holder.

ORO.GEN.135 - Continued validity of an AOC

(e) The operator's certificate shall be issued for a duration not exceeding 5 years and shall remain valid subject to:

(1) the operator remaining in compliance with Chapter 4/1 of the Air Navigation Act B.E 2497, its air operations requirements and Kingdom of Thailand Civil Aviation Regulations, taking into account the provisions related to the handling of findings as specified under ORO.GEN.150;

(2) the CAAT being granted access to the operator as defined in ORO.GEN.140 to determine continued compliance with the requirements of the Air Navigation Act B.E 2497 and Kingdom of Thailand Civil Aviation Regulations; and

(3) the certificate not being surrendered, revoked or expired.

(f) Upon revocation or surrender the certificate shall be returned to the CAAT without delay.

ORO.GEN.140 - Access

(a) For the purpose of determining compliance with the requirements of the Air Navigation Act B.E 2497 and the operator shall grant access at any time to any facility, aircraft, document, records, data, procedures or any other material relevant to its activity subject to certification, authorisation, whether it is contracted or not, to any person authorised by the CAAT, as defined in ORO.GEN.105 and in accordance with Sections 41/119 and 67/4 of the Air Navigation Act B.E.2497.

(b) Access to the aircraft mentioned under (a) shall, in the case of CAT, include the possibility to enter and remain in the aircraft during flight operations unless otherwise decided by the commander for the flight crew compartment in accordance with CAT.GEN.MPA.135 in the interest of safety.

ORO.GEN.150 - Findings

(a) Level of findings

A level 1 finding shall be issued by the CAAT when any significant non-compliance is detected with the applicable requirements, with the organisation's procedures and manuals or with the terms of an approval, or certificate which lowers safety or seriously endangers flight safety.

A level 2 finding shall be issued by the CAAT when any non-compliance is detected with the applicable requirement, with the organisation's procedures and manuals or with the terms of an approval, or certificate which could lower safety or seriously hazards flight safety

An observation is an opportunity for improvement which is minor gap, mostly documented and implemented. The management system that may be weak, cumbersome, redundant, overly complex, or in some other manner, may, in the opinion of the auditor, offer an opportunity for an organisation to improve its current status. An observation is not subject to any corrective actions unless it is accepted by auditee for improvement.

(b) After receipt of notification of findings, the organisation shall:

(1) identify the root cause of the non-compliance;

(2) define a corrective action plan;

(3) demonstrate corrective action implementation to the satisfaction of the CAAT.

(c) The actions referred to in points (b)(1), (b)(2) and (b)(3) shall be performed within the period agreed with the CAAT.

ORO.GEN.155 - Immediate reaction to a safety problem

The operator shall implement:

(a) any safety measures mandated by the CAAT; and

(b) any relevant mandatory safety information issued by the CAAT, including airworthiness directives.

ORO.GEN.160 - Occurrence reporting

(a) The operator shall report to the CAAT, and to any other organisation required by the State of the operator to be informed, any accident, serious incident and occurrence as defined in Section 61 of the Air Navigation Act B.E.2497 and Kingdom of Thailand Civil Aviation Regulations, including the Kingdom of Thailand Civil Aviation Occurrence Reporting Regulation.

(b) Without prejudice to point (a) the operator shall report to the CAAT and to the organisation responsible for the design of the aircraft any incident, malfunction, technical defect, exceeding of technical limitations or occurrence that would highlight inaccurate, incomplete or ambiguous information contained in the operational suitability data established in accordance with EASA, Part 21 or any equivalent material established in accordance with certification regulations acceptable to the CAAT, or other irregular circumstance that has or may have endangered the safe operation of the aircraft and that has not resulted in an accident or serious incident.

(c) Without prejudice the reports referred in paragraphs (a) and (b) shall be made in a form and manner established by the CAAT and contain all pertinent information about the condition known to the operator.

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

If the occurrence is categorised as an accident or serious incident, the Operator shall notify the CAAT immediately and submit initial report within 24 hours.

(e) Where relevant, the operator shall produce a follow-up report to provide details of actions it intends to take to prevent similar occurrences in the future, as soon as these actions have been identified. This report shall be produced in a form and manner established by the CAAT.

SECTION 2 Management

ORO.GEN.200 - Management system

(a) The operator shall establish, implement and maintain a management system that includes:

(1) A safety Management system.

This safety Management system shall include:

(i) clearly defined lines of responsibility and accountability throughout the operator, including a direct safety accountability of the accountable manager;

(ii) a description of the overall philosophies and principles of the operator with regard to safety, referred to as the safety policy;

(iii) the identification of aviation safety hazards entailed by the activities of the operator, their evaluation and the management of associated risks, including taking actions to mitigate the risk and verify their effectiveness;

Safety risk management shall include:

- Hazard identification processes
- Risk assessment and mitigation processes
- Internal safety investigation
- Safety performance monitoring and measurement
- The management of change
- Continuous improvement
- A system or plan to implement immediate safety actions and to coordinate with other parties involved in a safety related event

(iv) maintaining personnel trained and competent to perform their tasks;

(v) documentation of all safety management system key processes, including a process for making personnel aware of their responsibilities and the procedure for amending this documentation;

(2) a compliance monitoring system which has the function to monitor compliance of the operator with the relevant requirements. Compliance monitoring key processes shall be documented and shall include a feedback system of findings to the accountable manager to ensure effective implementation of corrective actions as necessary; and

(3) any additional requirements that are prescribed in the relevant Subparts of TCAR OPS Part ORO or other applicable regulations.

(b) The management system shall correspond to the size of the operator and the nature and complexity of its activities, taking into account the hazards and associated risks inherent in these activities.
Notwithstanding point (a) (1) (iii), for non-complex organizations safety risk management shall include at least:

- The use of Hazard checklists or similar risk management processes integrated into the activities of the organisation;
- The management of change;
- A system or plan to implement immediate safety actions and to coordinate with other parties involved in a safety related event.

ORO.GEN.205 - Contracted activities

(a) When contracting or purchasing any services or products as a part of its activities, the operator shall ensure all of the following:

(1) that the contracted or purchased services or products comply with the applicable requirements;

(2) that any aviation safety hazards associated with contracted or purchased services or products are considered by the operator's management system.

(b) When the certified operator or the authorisation holder contracts any part of its activity to an organisation that is not itself certified or authorised in accordance with this Part to carry out such activity, the contracted organisation shall work under the approval of the operator. The contracting organisation shall ensure that the CAAT is given access to the contracted organisation, to determine continued compliance with the applicable requirements.

ORO.GEN.210 - Personnel requirements

(a) The operator shall appoint an accountable manager, who has the authority for ensuring that all activities can be financed and carried out in accordance with the applicable requirements. The accountable manager shall be responsible for establishing and maintaining an effective management system.

(b) A person or group of persons shall be nominated by the operator, with the responsibility of ensuring that the operator remains in compliance with the applicable requirements. Such person(s) shall be ultimately responsible to the accountable manager.

(c) The operator shall have sufficient qualified personnel for the planned tasks and activities to be performed in accordance with the applicable requirements.

(d) The operator shall maintain appropriate experience, qualification and training records to show compliance with point (c).

(e) The operator shall ensure that all personnel are aware of the rules and procedures relevant to the exercise of their duties.

ORO.GEN.215 - Facility requirements

The operator shall have facilities allowing the performance and management of all planned tasks and activities in accordance with the applicable requirements.

ORO.GEN.220 - Record-keeping

(a) The operator shall establish a system of record-keeping that allows adequate storage and reliable traceability of all activities developed, covering in particular all the elements indicated in ORO.GEN.200.

(b) The format of the records shall be specified in the operator's procedures.

(c) Records shall be stored in a manner that ensures protection from damage, alteration and theft.

SECTION 3 – ADDITIONAL ORGANISATIONAL REQUIREMENTS

ORO.GEN.310 - Use of aircraft listed on an AOC for non-commercial operations and specialised operations

(a) Aircraft listed on an operator's AOC may remain on the AOC if it is operated in any of the following situations:

(1) by the AOC holder itself, for specialised operations in accordance with TCAR OPS Part SPO;

(2) by other operators, for non-commercial operations with motor-powered aircraft or for specialised operations performed in accordance with TCAR OPS Part NCC, TCAR OPS Part NCO or TCAR OPS Part SPO, provided that the aircraft is used for a continuous period not exceeding 30 days.

(b) When the aircraft is used in accordance with point (a)(2), the AOC holder providing the aircraft and the operator using the aircraft shall establish a procedure:

(1) clearly identifying which operator is responsible for the operational control of each flight and to describe how the operational control is transferred between them;

(2) describing the handover procedure of the aircraft upon its return to the AOC holder.

That procedure shall be included in the operations manual of each operator or in a contract between the AOC holder and the operator using the aircraft in accordance with point (a)(2). The AOC holder shall establish a template of such contract. Point ORO.GEN.220 shall apply to the record-keeping of those contracts.

The AOC holder and the operator using the aircraft in accordance with point (a)(2) shall ensure that the procedure is communicated to the relevant personnel.

(c) The AOC holder shall submit to the CAAT the procedure referred to in point (b) for prior approval. The AOC holder shall agree with the CAAT on the means and on the frequency of providing it with information about transfers of operational control in accordance with point ORO.GEN.130(c).

(d) The continuing airworthiness of the aircraft used in accordance with point (a) shall be managed by the organisation responsible for the continuing airworthiness of the aircraft included in the AOC.

(e) The AOC holder providing the aircraft in accordance with point (a) shall:

(1) indicate in its operations manual the registration marks of the provided aircraft and the type of operations conducted with those aircraft;

(2) remain informed at all times and keep record of each operator that holds the operational control of the aircraft at any given moment until the aircraft is returned to the AOC holder;

(3) ensure that its hazard identification, risk assessment and mitigation measures address all the operations conducted with those aircraft.

(f) For operations under TCAR OPS Part NCC and TCAR OPS Part SPO, the operator using the aircraft in accordance with point (a) shall ensure all of the following:

(1) that every flight conducted under its operational control is recorded in the aircraft technical log system;

(2) that no changes to the aircraft systems or configuration are made;

(3) that any defect or technical malfunction occurring while the aircraft is under its operational control is reported to the organisation referred to in point (d);

(4) that the AOC holder receives a copy of any occurrence report related to the flights performed with the aircraft, completed in accordance with the CAAT requirement No.22/2562 on reporting of civil aviation occurrences.

SUBPART AOC: AIR OPERATOR CERTIFICATION

ORO.AOC.100 - Application for an air operator certificate

(a) Without prejudice to the Air Navigation Act B.E.2497 prior to commencing commercial air transport operations, the operator shall apply for and obtain an air operator certificate (AOC) issued by the CAAT.

(b) The operator shall provide the following information to the CAAT:

(1) the official name and business name, address, and mailing address of the applicant;

(2) a description of the proposed operation, including the type(s), and number of aircraft to be operated;

(3) a description of the management system, including organisational structure;

(4) the name of the accountable manager;

(5) the names of the nominated persons required by ORO.AOC.135(a) together with their qualifications and experience;

(6) a copy of the operations manual required by ORO.MLR.100;

(7) a statement that all the documentation sent to the CAAT have been verified by the applicant and found in compliance with the applicable requirements.

(c) Applicants shall demonstrate to the CAAT that:

(1) they comply with the requirements of the Air Navigation Act B.E.2497, Chapter 4/1, this TCAR OPS Part ORO, TCAR OPS Part CAT and TCAR OPS Part SPA to this Regulation.

(2) all aircraft operated have a certificate of airworthiness (CofA) in accordance with applicable regulations or are dry-leased in accordance with ORO.AOC.110(c); and

(3) its organisation and management are suitable and properly matched to the scale and scope of the operation.

ORO.AOC.105 - Operations specifications and privileges of an AOC holder

The privileges of the operator, including those granted in accordance with TCAR OPS Part SPA, shall be specified in the operations specifications of the certificate.

ORO.AOC.110 - Leasing agreement

Any lease-in

(a) Any lease agreement concerning aircraft used by an operator certified in accordance with this Part shall be subject to prior approval by the CAAT.

Wet lease-in

(b) The applicant for the approval of the wet lease-in of an aircraft of a foreign operator shall demonstrate to the CAAT that:

(1) the foreign country operator holds a valid AOC issued in accordance with ICAO Annex6;

(2) the safety standards of the foreign operator with regard to continuing airworthiness and air operations are equivalent to the requirements for continuing airworthiness applicable in Thailand and TCAR OPS; and

(3) the aircraft has a standard CofA issued in accordance with ICAO Annex 8.

Dry lease-in

(c) Dry lease-in of an aircraft registered in a foreign country is not authorised.

Dry lease-out

(d) The operator certified in accordance with this Part intending to dry lease-out one of its aircraft shall apply for prior approval by the CAAT. The application shall be accompanied by copies of the intended lease agreement or description of the lease provisions, except financial arrangements, and all other relevant documentation.

Wet lease-out

(e) Prior to the wet lease-out of an aircraft, the operator certified in accordance with this Part shall notify the CAAT.

ORO.AOC.115 - Code-share agreements

(a) Without prejudice to applicable the CAAT safety requirements for foreign operators and aircraft, a Kingdom of Thailand operator certified in accordance with this Part shall enter into a code-share agreement with a foreign operator only after:

(1) having verified that the foreign operator complies with the applicable ICAO standards;

(2) having provided the CAAT with documented information in point (a)(1); and

(3) having obtained the CAAT acceptance after liaison with the authority of the State of the foreign-country operator.

(b) When implementing the code-share agreement the operator shall monitor and regularly assess the ongoing compliance of the foreign operator with the applicable ICAO standards.

(c) The operator certified in accordance with this Part shall not sell and issue tickets for a flight operated by a foreign operator when the foreign operator is failing to maintain compliance with the applicable ICAO standards.

ORO.AOC.120 - Approvals to provide cabin crew training and to issue cabin crew initial training certificate

(a) When intending to provide the training course required in TCAR OPS Part CC, the operator shall comply with the requirements for the conduct and content of training course established in TCAR OPS Part CC and shall ensure the following information specified in the Operations Manual (OM):

(1) qualifications of the instructors as relevant to the training elements to be covered;

(2) the name(s) of the training site(s) at which the training is to be conducted;

(3) a description of the facilities, training methods, and representative devices to be used; and

(4) the syllabi and associated programmes for the training course

(b) To issue cabin crew attestations, the operator shall, in addition to (a):

(1) demonstrate to the CAAT that:

(i) the organisation has the capability and accountability to perform this task;

(ii) the personnel conducting examinations are appropriately qualified as specified in Subpart TRC and Subpart CC where applicable, and free from conflict of interest; and

(2) provide the procedures and the specified conditions for:

(i) conducting the examination required by TCAR OPS Part CC, point CC.TRA.220;

(ii) issuing cabin crew initial training certificate; and

(iii) maintaining all relevant information and documentation related to the issued certificate, for the purpose of record-keeping oversight by the authority.

ORO.AOC.125 - Non-commercial operations of aircraft listed in the operations specifications by the holder of an AOC

(a) The AOC holder may conduct non-commercial operations in accordance with TCAR OPS Part NCC or Part NCO with aircraft listed in the operations specifications of its AOC or in its operations manual, provided that the AOC holder describes such operations in detail in the operations manual, including the following:

(1) an identification of the applicable requirements;

(2) a description of any differences between operating procedures used when conducting CAT operations and non-commercial operations;

(3) means of ensuring that all personnel involved in the operations are fully familiar with the associated procedures.

(b) An AOC holder shall comply with:

(1) TCAR OPS Part SPO when conducting maintenance check flights with complex motor-powered aircraft;

(2) TCAR OPS Part NCO when conducting maintenance check flights with other than complex motor- powered aircraft.

(c) An AOC holder conducting operations referred to in (a) and (b) shall not be required to submit a declaration in accordance with subpart DEC.

(d) The AOC holder shall specify the type of flight, as listed in its operations manual, in the flight-related documents (operational flight plan, loadsheet and other equivalent documents).

ORO.AOC.130 - Flight data monitoring — aeroplanes & helicopters

(a) The operator shall establish and maintain a flight data monitoring programme, which shall be integrated in its management system, for aeroplanes of a certificated take-off mass in excess of:

- 27,000 kg; or
- 15,000 kg with a passenger seating capacity greater than 19, and with a certificate of airworthiness first issued on or after 1 January 2027.

Shall be equipped with a means to support a flight data monitoring programme.

(b) The Helicopter operator shall establish a flight data monitoring programme, which shall be integrated in its management system, for helicopters with a maximum certificated take-off mass of more than 7 000 Kg or MOPSC of more than 9 seats if fitted with a fight data recorder. In doing so the operator shall take account of the information on the establishment of a flight data monitoring programme at SPA.HOFO.145

(c) The flight data monitoring programme shall be non-punitive and contain adequate safeguards to protect the source(s) of the data.

ORO.AOC.135 - Personnel requirements

(a) In accordance with ORO.GEN.210(b), the operator shall nominate persons responsible for the management and supervision of the following areas:

(1) flight operations;

(2) crew training;

(3) ground operations; and

(4) continuing airworthiness management.

(b) Adequacy and competency of personnel

(1) The operator shall employ sufficient personnel for the planned ground and flight operations.

(2) All personnel assigned to, or directly involved in, ground and flight operations shall:

(i) be properly trained;

(ii) demonstrate their capabilities in the performance of their assigned duties; and

(iii) be aware of their responsibilities and the relationship of their duties to the operation as a whole.

(c) Supervision of personnel

(1) The operator shall appoint a sufficient number of personnel supervisors, taking into account the structure of the operator's organisation and the number of personnel employed.

(2) The duties and responsibilities of these supervisors shall be defined, and any other necessary arrangements shall be made to ensure that they can discharge their supervisory responsibilities.

(3) The supervision of crew members and personnel involved in the operation shall be exercised by individuals with adequate experience and the skills to ensure the attainment of the standards specified in the operations manual.

ORO.AOC.140 - Facility requirements

In accordance with ORO.GEN.215, the operator shall:

(a) make use of appropriate ground handling facilities to ensure the safe handling of its flights;

(b) arrange operational support facilities at the main operating base, appropriate for the area and type of operation; and

(c) ensure that the available working space at each operating base is sufficient for personnel whose actions may affect the safety of flight operations. Consideration shall be given to the needs of ground crew, personnel concerned with operational control, the storage and display of essential records and flight planning by crews.

ORO.AOC.150 - Documentation requirements

(a) The operator shall make arrangements for the production of manuals and any other documentation required and associated amendments.

(b) The operator shall be capable of distributing operational instructions and other information without delay.

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SUBPART DEC: DECLARATION

ORO.DEC.100 Declaration

The operators of complex motor-powered aircraft engaged in non-commercial operations or non-commercial specialised operations, and the commercial specialised operators shall:

(a) provide the CAAT with all relevant information and obtain the corresponding authorisation prior to commencing operations. The relevant information shall be provided using the form contained in Appendix I to this TCAR OPS Part ORO;

(b) maintain compliance with the applicable requirements and with the information given in the declaration;

(c) notify the CAAT of any change to its declaration through submission of an amended declaration and shall obtain the corresponding amended authorisation from the CAAT prior to implementing the change(s); and

(d) notify the CAAT when it ceases operation.

Operators intending to perform high risk commercial specialised operation shall obtain a special authorisation from the CAAT in accordance with ORO.SPO.110 prior to commencing the high risk commercial specialised operations.

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SUBPART SPO: COMMERCIAL SPECIALISED OPERATIONS

ORO.SPO.100 - Common requirements for commercial specialised operators

(a) A commercial specialised operator shall obtain approval from the CAAT prior to commencing operations in accordance with ORO.DEC.100 and shall also comply with ORO.AOC.135, ORO.AOC.140 and ORO.AOC.150.

(b) Aircraft shall have a certificate of airworthiness (CofA) in accordance with applicable airworthiness requirements for aircraft registered in the kingdom of Thailand or shall be leased-in in accordance with (c).

(c) A commercial specialised operator shall obtain prior approval from the CAAT and comply with the following conditions, if:

(1) Wet leasing-in an aircraft of a foreign country operator:

(i) The safety standards of a foreign country operator with regard to continuing airworthiness and air operations are equivalent to the applicable airworthiness requirements and to TCAR OPS;

(ii) The aircraft of a foreign country operator has a standard CofA issued in accordance with ICAO Annex 8;

(iii) The duration of the wet lease-in does not exceed seven months in any 12 consecutive month period; or

(2) Dry leasing-in an aircraft registered in a foreign country is not authorised by the CAAT.

ORO.SPO.110 - Authorisation of high risk commercial specialised operations

(a) A commercial specialised operator shall apply for and obtain an authorisation issued by the CAAT prior to commencing a high risk specialised operation:

(1) that is carried out over an area where the safety of third parties on the ground is likely to be endangered in the event of an emergency, or

(2) that in respect to the place where the operation is conducted, as determined by the CAAT, including taking account of its specific nature and the local environment in which it is conducted, poses a risk, in particular to third parties on the ground.

(b) The operator shall provide the following information to the CAAT

(1) the official name and business name, address, and mailing address of the applicant;

(2) a description of the management system, including organisational structure;

(3) a description of the proposed operation, including the type(s), and number of aircraft to be operated;

(4) the risk assessment documentation and related standard operating procedures, required by SPO.OP.230;

(5) a statement that all the documentation sent to the CAAT has been verified by the operator and found in compliance with the applicable requirements.

(c) The application for an authorisation or its amendment shall be made in a form and manner established by the CAAT, taking into account the requirements of the Air Navigation Act B.E 2497 and Kingdom of Thailand Civil Aviation Regulations.

ORO.SPO.115 - Changes

(a) Any change affecting the scope of the authorisation or the authorised operations shall require prior approval of the CAAT. Any change not covered by the initial risk assessment, shall require the submission of an amended risk assessment and SOP to the CAAT.

(b) The application for approval of a change shall be submitted before any such change takes place, in order to enable the CAAT to determine continued compliance with the Air Navigation Act B.E 2497 and Kingdom of Thailand Civil Aviation Regulations, and to amend, if necessary, the authorisation. The operator shall provide the CAAT with any relevant documentation.

(c) The change shall only be implemented upon receipt of formal approval by the CAAT.

(d) The operator shall operate under the conditions prescribed by the CAAT during such changes, as applicable.

ORO.SPO.120 - Continued validity

(a) An operator holding a specialised operation authorisation shall comply with the scope and privileges defined in the authorisation.

(b) The operator's authorisation shall be issued for a duration not exceeding 3 years and shall remain valid subject to:

(1) the operator remaining in compliance with the requirements of the Air Navigation Act B.E 2497 and Kingdom of Thailand Civil Aviation Regulations, taking into account the provisions related to the handling of findings as specified under ORO.GEN.150;

(2) the CAAT being granted access to the operator as defined in ORO.GEN.140 to determine continued compliance with the relevant requirements of the Air Navigation Act B.E 2497 and Kingdom of Thailand Civil Aviation Regulations; and

(3) the authorisation not being surrendered, revoked or expired.

(c) Upon revocation or surrender the authorisation shall be returned to the CAAT without delay.

SUBPART MLR: MANUALS, LOGS AND RECORDS

ORO.MLR.100 - Operations manual — general

(a) The operator shall establish an operations manual (OM) in accordance with the Air Navigation Act B.E 2497 and Kingdom of Thailand Civil Aviation Regulations. To the extent that it is applicable, this requirement shall also apply to the establishment of a flight safety documents system by an operator, whether in operations manuals and/or an operator's management system documentation.

(b) The content of the OM shall reflect the requirements set out in this TCAR OPS Part ORO, Part CAT, Part SPA, Part NCC and Part SPO, as applicable, and shall not contravene the conditions contained in the operations specifications to the air operator certificate (AOC), the authorisation or the list of specific approvals, as applicable.

(c) The OM may be issued in separate parts.

(d) All operations personnel shall have easy access to the portions of the OM that are relevant to their duties.

(e) The OM shall be kept up to date. All personnel shall be made aware of the changes that are relevant to their duties.

(f) Each crew member shall be provided with a personal copy of the relevant sections of the OM pertaining to their duties. Each holder of an OM, or appropriate parts of it, shall be responsible for keeping their copy up to date with the amendments or revisions supplied by the operator.

(g) For AOC holders:

(1) for amendments required to be notified in accordance with ORO.GEN.115(b) and ORO.GEN.130(c), the operator shall supply the CAAT with intended amendments in advance of the effective date; and

(2) for amendments to procedures associated with prior approval items in accordance with ORO.GEN.130, approval shall be obtained before the amendment becomes effective.

(g1) For SPO authorisation holders, any amendment associated with the authorised standard operating procedures, prior approval shall be obtained before the amendment becomes effective.

(h) Notwithstanding (g) and (g1), when immediate amendments or revisions are required in the interest of safety, they may be published and applied immediately, provided that any approval required has been applied for.

(i) The operator shall incorporate all amendments and revisions required by the CAAT.

(j) The operator shall ensure that information taken from approved documents, and any amendment thereof, is correctly reflected in the OM. This does not prevent the operator from publishing more conservative data and procedures in the OM.

(k) The operator shall ensure that all personnel are able to understand the language in which those parts of the OM which pertain to their duties and responsibilities are written. The content of the OM shall be presented in a form that can be used without difficulty and observes human factors principles.

ORO.MLR.101 - Operations manual — structure for commercial air transport

Except for operations with single-engined propeller-driven aeroplanes with a MOPSC of 5 or less or with single-engined non-complex helicopters with a MOPSC of 5 or less, taking off and landing at the same aerodrome or operating site, under VFR by day, the main structure of the OM shall be as follows:

(a) Part A: General/Basic, comprising all non-type-related operational policies, instructions and procedures;

(b) Part B: Aircraft operating matters, comprising all type-related instructions and procedures, taking into account differences between types/classes, variants or individual aircraft used by the operator;

(c) Part C: Commercial air transport operations, comprising route/role/area and aerodrome/operating site instructions and information;

(d) Part D: Training, comprising all training instructions for personnel required for a safe operation.

ORO.MLR.105 - Minimum equipment list

(a) A minimum equipment list (MEL) shall be established as specified under the Air Navigation Act B.E 2497 and Kingdom of Thailand Civil Aviation Regulations, it shall be based on the relevant master minimum equipment list (MMEL) as approved or published by relevant authority in charge of type certification. If an MMEL has not been established, the MEL may be based on the relevant MMEL accepted by the State of Operator or Registry as applicable.

(b) The MEL and any amendment thereto shall be approved by the CAAT.

(c) The operator shall amend the MEL after any applicable change to the MMEL within the acceptable timescales.

(d) In addition to the list of items, the MEL shall contain:

(1) a preamble, including guidance and definitions for flight crews and maintenance personnel using the MEL;

(2) the revision status of the MMEL upon which the MEL is based and the revision status of the MEL;

(3) the scope, extent and purpose of the MEL.

(e) The operator shall:

(1) establish rectification intervals for each inoperative instrument, item of equipment or function listed in the MEL. The rectification interval in the MEL shall not be less restrictive than the corresponding rectification interval in the MMEL;

(2) establish an effective rectification programme;

(3) only operate the aircraft after expiry of the rectification interval specified in the MEL when:

(i) the defect has been rectified; or

(ii) the rectification interval has been extended in accordance with (f).

(f) Subject to approval of the CAAT, the operator may use a procedure for the one time extension of category B, C and D rectification intervals, provided that:

(1) the extension of the rectification interval is within the scope of the MMEL for the aircraft type;

(2) the extension of the rectification interval is, as a maximum, of the same duration as the rectification interval specified in the MEL;

(3) the rectification interval extension is not used as a normal means of conducting MEL item rectification and is used only when events beyond the control of the operator have precluded rectification;

(4) a description of specific duties and responsibilities for controlling extensions is established by the operator;

(5) the CAAT is notified of any extension of the applicable rectification interval; and

(6) a plan to accomplish the rectification at the earliest opportunity is established.

(g) The operator shall establish the operational and maintenance procedures referenced in the MEL taking into account the operational and maintenance procedures referenced in the MMEL. These procedures shall be part of the operator's manuals or the MEL.

(h) The operator shall amend the operational and maintenance procedures referenced in the MEL after any applicable change to the operational and maintenance procedures referenced in the MMEL.

(i) Unless otherwise specified in the MEL, the operator shall complete:

(1) the operational procedures referenced in the MEL when planning for and/or operating with the listed item inoperative; and

(2) the maintenance procedures referenced in the MEL prior to operating with the listed item inoperative.

(j) Subject to a specific case-by-case approval by the CAAT, the operator may operate an aircraft with inoperative instruments, items of equipment or functions outside the constraints of the MEL but within the constraints of the MMEL, provided that:

(1) the concerned instruments, items of equipment or functions are within the scope of the MMEL as defined in point (a);

(2) the approval is not used as a normal means of conducting operations outside the constraints of the approved MEL and is used only when events beyond the control of the operator have precluded the MEL compliance;

(3) a description of specific duties and responsibilities for controlling the operation of the aircraft under such approval is established by the operator; and

(4) a plan to rectify the inoperative instruments, items of equipment or functions or to return operating the aircraft under the MEL constraints at the earliest opportunity is established.

ORO.MLR.110 - Journey log

Particulars of the aircraft, its crew and each journey shall be retained for each flight, or series of flights, in the form of a journey log, or equivalent.

ORO.MLR.115 - Record-keeping

(a) The following records shall be stored for at least 5 years.

(1) for CAT operators, records of the activities referred to in ORO.GEN.200;

(2) for declared operators, a copy of the operator's declaration, details of approvals held and operations manual;

(3) for SPO authorisation holders, in addition to (a)(2), records related to the risk assessment conducted in accordance with SPO.OP.230 and related standard operating procedures.

(b) The following information used for the preparation and execution of a flight, and associated reports, shall be stored for three months:

(1) the operational flight plan, if applicable;

(2) route-specific notice(s) to airmen (NOTAM) and aeronautical information services (AIS) briefing documentation, if edited by the operator;

(3) mass and balance documentation;

(4) notification of special loads, including written information to the commander/pilot-in-command about dangerous goods, if applicable;

(5) the journey log, or equivalent; and

(6) flight report(s) for recording details of any occurrence, or any event that the commander/pilot-in-command deems necessary to report or record;

(c) Personnel records shall be stored for the periods indicated below:

Flight crew licence and cabin crew initial training certificate	As long as the crew member is exercising the privileges of the licence or certificate for the aircraft operator
Crew member training, checking and qualifications	3 years
Records on crew member recent experience	15 months
Crew member route and aerodrome/task and area competence, as appropriate	3 years
Dangerous goods training, as appropriate	3 years
Training/qualification records of other personnel for whom a training programme is required	Last 2 training records

(d) The operator shall:

(1) maintain records of all training, checking and qualifications of each crew member, as prescribed in Part ORO; and

(2) make such records available, on request, to the crew member concerned, and made fully available when requested by the CAAT.

(e) The operator shall preserve the information used for the preparation and execution of a flight and personnel training records, even if the operator ceases to be the operator of that aircraft or the employer of that crew member, provided this is within the timescales prescribed in (c).

(f) If a crew member becomes a crew member for another operator, the operator shall make the crew member's records available to the new operator, provided this is within the timescales prescribed in (c).

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SUBPART SEC: SECURITY

ORO.SEC.100 - Flight crew compartment security — aeroplanes

(a) In an aeroplane which is equipped with a flight crew compartment door, that door shall be capable of being locked, and means shall be provided by which the cabin crew can notify the flight crew in the event of suspicious activity or security breaches in the cabin.

(b) All passenger-carrying aeroplanes that are engaged in the commercial transportation of passengers shall be equipped with an approved secure flight crew compartment door that is capable of being locked and unlocked from either pilot's station and designed to meet the applicable airworthiness requirements, where such airplanes fall within any of the following categories:

(1) aeroplanes with an MCTOM that exceeds 54 500 kg;

(2) aeroplanes with an MCTOM that exceeds 45 500 kg and have an MOPSC of more than 19; or

(3) aeroplanes with an MOPSC of more than 60.

(c) In all aeroplanes which are equipped with a secure flight crew compartment door in accordance with point (b) above:

(1) this door shall be closed and locked from the time that the first passenger gets inside the aircraft to the time that the last passenger gets outside the aircraft, except when deemed to be necessary for authorised persons to access or egress in compliance with national civil aviation security programme; and

(2) means shall be provided for monitoring from either pilot's station the entire door area outside the flight crew compartment to identify persons that request to enter and to detect suspicious behaviour or potential threat.

ORO.SEC.105 - Flight crew compartment security — helicopters

If installed, the flight crew compartment door on a helicopter operated for the purpose of carrying passengers shall be capable of being locked from within the flight crew compartment in order to prevent unauthorised access.

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SUBPART FC: FLIGHT CREW

ORO.FC.005 - Scope

This Subpart establishes requirements to be met by the operator related to flight crew training, experience and qualification and comprises:

(a) SECTION 1 specifying common requirements applicable to both non-commercial operations of complex motor-powered aircraft and any commercial operation;

(b) SECTION 2 specifying additional requirements applicable to commercial air transport operations, with the exception of commercial air transport operations of passengers conducted under VFR by day, starting and ending at the same aerodrome or operating site and within a local area specified by the CAAT, with:

(1) single-engined propeller-driven aeroplanes having an MCTOM of 5 700 kg or less and an MOPSC of 5 or less; or

(2) other-than-complex motor-powered helicopters, single-engined, with an MOPSC of 5 or less.

(c) SECTION 3 specifying additional requirements for commercial specialised operations and for those referred to in b(1) and (2).

SECTION 1 Common requirements

ORO.FC.100 - Composition of flight crew

(a) The composition of the flight crew and the number of flight crew members at designated crew stations shall be not less than the minimum specified in the aircraft flight manual or operating limitations prescribed for the aircraft.

(b) The flight crew shall include additional flight crew members when required by the type of operation and shall not be reduced below the number specified in the operations manual.

(c) All flight crew members shall hold a licence and ratings issued or accepted in accordance with TCAR PEL and appropriate to the duties assigned to them.

(d) The flight crew member may be relieved in flight of his or her duties at the controls by another suitably qualified flight crew member.

(e) When engaging the services of flight crew members who are working on a freelance or part-time basis, the operator shall verify that all applicable requirements of this Subpart and the relevant elements of TCAR PEL Part FCL, including the requirements on recent experience, are complied with, taking into account all services rendered by the flight crew member to other operator(s) to determine in particular:

(1) the total number of aircraft types or variants operated; and

(2) the applicable national flight and duty time limitations and rest requirements.

(f) Specific requirements for helicopter operations

If the helicopter is operated with a crew of two pilots, each pilot shall either:

(1) hold a certificate of satisfactory completion of a multi-crew cooperation (MCC) course in helicopters in accordance with TCAR PEL; or

(2) have at least 500 hours of flight time as a pilot in multi-pilot operations.

ORO.FC.105 - Designation as pilot-in-command/commander

(a) In accordance with TCAR PEL Part FCL, one pilot amongst the flight crew, qualified as pilot-in-command shall be designated by the operator as pilot-in-command or, for commercial air transport operations, as commander.

(b) The operator shall only designate a flight crew member to act as pilot-in-command/commander if all of the following apply:

(1) the flight crew member has the minimum level of experience specified in the operations manual;

(2) the flight crew member has adequate knowledge of the route or area to be flown and of the aerodromes, including alternate aerodromes, facilities and procedures to be used;

(3) in the case of multi-crew operations, the flight crew member has completed an operator's command course if upgrading from co-pilot to pilot-in-command/commander.

(c) In the case of commercial operations of aeroplanes and helicopters, the pilot-in-command/commander or the pilot to whom the conduct of the flight may be delegated shall have had initial familiarisation training on the route or area to be flown and on the

aerodromes, facilities and procedures to be used and shall maintain this knowledge as follows:

(1) The validity of the aerodrome knowledge shall be maintained by operating at least once on the aerodrome within a 12 calendar months' period.

(2) The route or area knowledge shall be maintained by operating at least once to the route or area within a 36 months' period. In addition, refresher training is required regarding route or area knowledge if not operating on a route or area for 12 months within the 36-month period.

(d) Notwithstanding point (c), in the case of operations under VFR by day with performance class B and C aeroplanes and helicopters, familiarisation training on the route and aerodromes may be replaced by area familiarisation training.

ORO.FC.110 - Flight engineer

When a separate flight engineer station is incorporated in the design of an aeroplane, the flight crew shall include one crew member who is suitably qualified in accordance with applicable national rules.

ORO.FC.115 - Crew resource management (CRM) training

(a) Before operating, the flight crew member shall have received CRM training, appropriate to his/her role, as specified in the operations manual.

(b) Elements of CRM training shall be included in the aircraft type or class training and recurrent training as well as in the command course.

ORO.FC.120 - Operator conversion training

(a) In the case of aeroplane or helicopter operations, the flight crew member shall complete the operator conversion training course before commencing unsupervised line flying:

(1) when changing to an aircraft for which a new type or class rating is required;

(2) when joining an operator.

(b) The operator conversion training course shall include training on the equipment installed on the aircraft as relevant to flight crew members' roles.

ORO.FC.125 - Differences training and familiarisation training

(a) Flight crew members shall complete differences training or familiarisation when required by TCAR PEL Part FCL.

(b) Flight crew members shall complete equipment and procedure training when changing equipment or changing procedures requiring additional knowledge on types or variants currently operated.

(c) The operations manual shall specify when such differences training or familiarisation or equipment and procedure training is required.

ORO.FC.130 - Recurrent training and checking

(a) Each flight crew member shall complete annual recurrent flight and ground training relevant to the type or variant, and associated equipment of aircraft on which he or she operates, including training on the location and use of all emergency and safety equipment carried on board the aircraft.

(b) Each flight crew member shall be periodically checked to demonstrate competence in carrying out normal, abnormal and emergency procedures.

ORO.FC.135 - Pilot qualification to operate in either pilot's seat

Flight crew members who may be assigned to operate in either pilot's seat shall complete appropriate training and checking as specified in the operations manual.

ORO.FC.140 - Operation on more than one type or variant

(a) Flight crew members that operate more than one type or variant of aircraft shall comply with the requirements prescribed in this Subpart for each type or variant, unless credits related to the training, checking, and recent experience requirements are defined in the mandatory part of the operational suitability data established in accordance with EASA Part 21 or any equivalent material acceptable to the CAAT for the relevant types or variants.

(b) The operator may define groups of single-engined helicopter types. An operator proficiency check on one type shall be valid for all the other types within the group if both of the following conditions are met:

(1) the group either includes only single-engined turbine helicopters operated under VFR or it includes only single-engined piston helicopters operated under VFR;

(2) for CAT operations, at least two operator proficiency checks per type shall be conducted within a 3-year cycle.

(c) For specialised operations, elements of the aircraft/FSTD training and operator proficiency check that cover the relevant aspects associated with the specialised task and are not related to the type or group of types may be credited towards the other groups or types, based on a risk assessment performed by the operator.

(d) For operations on more than one helicopter type or variant that are used for conducting sufficiently similar operations, if line checks rotate between types or variants, each line check shall revalidate the line check for the other helicopter types or variants.

(e) Appropriate procedures and any operational restrictions shall be specified in the operations manual for any operation on more than one type or variant.

ORO.FC.145 - Provision of training

(a) All training, checking and assessment required in this Subpart shall be conducted in accordance with the training programmes and syllabi established by the operator in the operations manual;

(b) When establishing the training programmes and syllabi, the operator shall include the relevant elements defined in the mandatory part of the operational suitability data established in accordance with EASA Part 21 or any equivalent material acceptable to the CAAT.

(c) In the case of CAT operations, training and checking programmes, including syllabi and the use of the means to deliver the programme such as individual flight simulation training devices (FSTDs) and other training solutions, shall be approved by the CAAT.

(d) The FSTD used to meet the requirements of this Subpart shall be qualified in accordance with TCAR PEL and it shall replicate the aircraft used by the operator, as far as practicable. Differences between the FSTD and the aircraft shall be described and addressed through a briefing or training, as appropriate.

(e) The operator shall establish a system to adequately monitor changes to the FSTD and to ensure that those changes do not affect the adequacy of the training programmes.

(f) The operator shall monitor the validity of each recurrent training and checking.

(g) The validity periods required in this Subpart shall be counted from the end of the month in which the recency, training or check was completed.

ORO.FC.146 - Personnel providing training, checking and assessment

(a) All training, checking and assessment required in this Subpart shall be conducted by appropriately qualified personnel.

(b) In the case of flight and flight simulation training, checking and assessment, the personnel that provide the training and conduct the checking or assessment shall be qualified in accordance with TCAR PEL Part FCL. Additionally, the personnel providing training and conducting checking towards specialised operations shall be suitably qualified for the relevant operation.

(c) For an EBT programme, the personnel that performs assessment and provides training shall:

(1) hold a TCAR PEL Part FCL instructor or examiner certificate;

(2) complete the operator's EBT instructor standardisation programme. This shall include an initial standardisation programme and a recurrent standardisation programme.

Completion of the operator's EBT initial standardisation will qualify the instructor to perform EBT practical assessment.

(d) Notwithstanding point (b), the line evaluation of competence may be conducted by a suitably qualified commander nominated by the operator that is standardised in EBT concepts and the assessment of competencies (line evaluator).

(e) Notwithstanding point (b), the aircraft/FSTD training and the operator proficiency check may be conducted by a suitably qualified commander holding a FI/TRI/SFI certificate and nominated by the operator for any of the following operations:

(1) CAT operations of helicopters meeting the criteria defined in point ORO.FC.005(b)(2);

(2) CAT operations of other than complex motor-powered helicopters by day and over routes navigated by reference to visual landmarks;

(3) CAT operations of performance class B aeroplanes that do not meet the criteria defined in point ORO.FC.005(b)(1).

(f) Notwithstanding point (b), the aircraft/FSTD training and the demonstration of competence/operator proficiency check may be conducted by a suitably qualified pilot-in-command/commander nominated by the operator for any of the following operations:

(1) specialised operations;

(2) CAT operations of aeroplanes meeting the criteria defined in point ORO.FC.005(b)(1).

(g) Notwithstanding point (b), the line check may be conducted by a suitably qualified commander nominated by the operator.

(h) The operator shall inform the CAAT about the persons nominated under points (e) to (g).

SECTION 2 Additional requirements for commercial air transport operations

ORO.FC.200 - Composition of flight crew

(a) There shall not be more than one inexperienced flight crew member in any flight crew.

(b) The commander may delegate the conduct of the flight to another pilot suitably qualified in accordance with TCAR PEL Part FCL.provided that the requirements of ORO.FC.105(b)(1), (b)(2) and (c) are complied with.

(c) Specific requirements for aeroplane operations under instrument flight rules (IFR) or at night.

(1) The minimum flight crew shall be two pilots for all turbo-propeller aeroplanes with a maximum operational passenger seating configuration (MOPSC) of more than nine and all turbojet aeroplanes.

(2) Aeroplanes other than those covered by (c)(1) and with a maximum take-off mass of not more than 5 700 kg shall be operated with a minimum crew of two pilots, unless the requirements of ORO.FC.202 are complied with, in which case they may be operated by a single pilot.

(d) Specific requirements for helicopter operations

For all operations of helicopters with an MOPSC of more than 19 and for operations under IFR of helicopters with an MOPSC of more than 9, the minimum flight crew shall be two pilots.

ORO.FC.A.201 - In-flight relief of flight crew members

(a) The commander may delegate the conduct of the flight to:

(1) another qualified commander; or

(2) for operations only above flight level (FL) 200, a pilot who complies with the following minimum qualifications:

(i) ATPL;

(ii) conversion training and checking, including type rating training, in accordance with ORO.FC.220;

(iii) all recurrent training and checking in accordance with ORO.FC.230 and ORO.FC.240;

(iv) route/area and aerodrome competence in accordance with ORO.FC.105.

(b) The co-pilot may be relieved by:

(1) another suitably qualified pilot;

(2) for operations only above FL 200, a cruise relief co-pilot that complies with the following minimum qualifications:

(i) valid commercial pilot licence (CPL) with an instrument rating;

(ii) conversion training and checking, including type rating training, in accordance with ORO.FC.220 except the requirement for take-off and landing training;

(iii) recurrent training and checking in accordance with ORO.FC.230 except the requirement for take-off and landing training.

(c) A flight engineer may be relieved in flight by a crew member suitably qualified in accordance with applicable national rules.

ORO.FC.202 - Single-pilot operations under IFR or at night

In order to be able to fly under IFR or at night with a minimum flight crew of one pilot, the following shall be complied with:

(a) The activity needs the approval of the CAAT and the operator shall include in the operations manual a pilot's conversion and recurrent training programme that includes the additional requirements for a single-pilot operation. The pilot shall have undertaken training on the operator's procedures, in particular regarding:

(1) engine management and emergency handling;

(2) use of normal, abnormal and emergency checklist;

(3) air traffic control (ATC) communication;

(4) departure and approach procedures;

(5) autopilot management, if applicable;

(6) use of simplified in-flight documentation;

(7) single-pilot crew resource management.

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(c) For aeroplane operations under IFR the pilot shall have:

(1) a minimum of 50 hours flight time under IFR on the relevant type or class of aeroplane, of which 10 hours are as commander; and

(2) completed during the preceding 90 days on the relevant type or class of aeroplane:

(i) five IFR flights, including three instrument approaches, in a single-pilot role; or

(ii) an IFR instrument approach check.

(d) For aeroplane operations at night the pilot shall have:

(1) a minimum of 15 hours flight time at night which may be included in the 50 hours flight time under IFR in (c)(1); and

(2) completed during the preceding 90 days on the relevant type or class of aeroplane:

(i) three take-offs and landings at night in the single pilot role; or

(ii) a night take-off and landing check.

ORO.FC.205 - Command course

(a) For aeroplane and helicopter operations, the command course shall include at least the following elements:

(1) training in an FSTD, which includes line oriented flight training (LOFT) and/or flight training;

(2) the operator proficiency check, operating as commander;

(3) command responsibilities training;

(4) line training as commander under supervision, for a minimum of:

(i) 10 flight sectors, in the case of aeroplanes; and

(ii) 10 hours, including at least 10 flight sectors, in the case of helicopters;

(5) completion of a line check as commander and demonstration of adequate knowledge of the route or area to be flown and of the aerodromes, including alternate aerodromes, facilities and procedures to be used; and

(6) crew resource management training.

ORO.FC.215 - Initial operator's crew resource management (CRM) training

(a) The flight crew member shall have completed an initial CRM training course before commencing unsupervised line flying.

(b) Initial CRM training shall be conducted by at least one suitably qualified CRM trainer who may be assisted by experts in order to address specific areas.

If the flight crew member has not previously received theoretical training in human factors to the ATPL level, he/she shall complete, before or combined with the initial CRM training, a theoretical course provided by the operator and based on the human performance and limitations syllabus for the ATPL as established in TCAR PEL Part FCL.

ORO.FC.220 - Operator conversion training and checking

(a) CRM training shall be integrated into the operator conversion training course.

(b) Once an operator conversion course has been commenced, the flight crew member shall not be assigned to flying duties on another type or class of aircraft until the course is completed or terminated. Crew members operating only performance class B aeroplanes may be assigned to flights on other types of performance class B aeroplanes during conversion courses to the extent necessary to maintain the operation. Crew members may be assigned to flights on single-engined helicopters during an operator conversion course on a single-engined helicopter, provided that the training is unaffected.

(c) The amount of training required by the flight crew member for the operator's conversion course shall be determined in accordance with the standards of qualification and experience specified in the operations manual, taking into account his/her previous training and experience.

(d) The flight crew member shall complete:

(1) the operator proficiency check and the emergency and safety equipment training and checking before commencing line flying under supervision (LIFUS); and

(2) the line check upon completion of line flying under supervision. For performance class B aeroplanes, LIFUS may be performed on any aeroplane within the applicable class.

(e) In the case of aeroplanes, pilots that have been issued a type rating based on a zero flight-time training ('ZFTT') course shall:

(1) commence line flying under supervision not later than 21 days after the completion of the skill test or after appropriate training provided by the operator. The content of that training shall be described in the operations manual;

(2) complete six take-offs and landings in an FSTD not later than 21 days after the completion of the skill test under the supervision of a type rating instructor for aeroplanes ('TRI(A)') occupying the other pilot seat. The number of take-offs and landings may be reduced when credits are defined in the mandatory part of the operational suitability data established in accordance with EASA, Part 21 or any equivalent material established in accordance with certification regulations acceptable to the CAAT. If those take-offs and landings have not been performed within 21

days, the operator shall provide refresher training the content of which shall be described in the operations manual;

(3) conduct the first four take-offs and landings of the LIFUS in the aeroplane under the supervision of a TRI(A) occupying the other pilot seat. The number of take-offs and landings may be reduced when credits are defined in the mandatory part of the operational suitability data established in accordance with EASA, Part 21 or any equivalent material established in accordance with certification regulations acceptable to the CAAT.

(f) If operational circumstances, such as applying for a new AOC or adding a new aircraft type or class to the fleet, do not allow the operator to comply with the requirements in (d), the operator may develop a specific conversion course, to be used temporarily for a limited number of pilots.

ORO.FC.230 - Recurrent training and checking

(a) Each flight crew member shall complete recurrent training and checking relevant to the type or variant, and associated equipment of aircraft on which they operate.

(b) **Operator proficiency check**

(1) Each flight crew member shall complete operator proficiency checks as part of the normal crew complement.

(2) When the flight crew member will be required to operate under IFR, the operator proficiency check shall be conducted without external visual reference, as appropriate.

(3) The validity period of the operator proficiency check shall be 6 calendar months. For operations under VFR by day of performance class B aeroplanes that are conducted during seasons not longer than 8 consecutive months, one operator proficiency check shall be sufficient. The proficiency check shall be undertaken before commencing CAT operations.

(c) **Line check**

Each flight crew member shall complete a line check on the aircraft. The validity period of the line check shall be 12 calendar months.

(d) **Emergency and safety equipment training and checking**

Each flight crew member shall complete recurrent training and checking on the location and use of all emergency and safety equipment carried on board the aircraft. The validity period of an emergency and safety equipment training and checking shall be 12 calendar months.

(e) CRM training

(1) Elements of CRM shall be integrated into all appropriate phases of the recurrent training.

(2) Each flight crew member shall undergo specific modular CRM training. All major topics of CRM training shall be covered by distributing modular training sessions as evenly as possible over each 3-year period.

(f) Each flight crew member shall undergo ground training and flight training in an FSTD or an aircraft, or a combination of FSTD and aircraft training, at least every 12 calendar months.

(g) The validity periods mentioned in (b)(3), (c) and (d) shall be counted from the end of the month when the check was taken.

(h) When the training or checks required above are undertaken within the last three months of the validity period, the new validity period shall be counted from the original expiry date.

ORO.FC.231 - Evidence-based training

(a) EBT PROGRAMME

(1) The operator may substitute the requirements of ORO.FC.230 by establishing, implementing and maintaining a suitable EBT programme approved by the CAAT.

The operator shall demonstrate its capability to support the implementation of the EBT programme (including an implementation plan) and perform a safety risk assessment demonstrating how an equivalent level of safety is achieved.

(2) The EBT programme shall:

(i) correspond to the size of the operator, and the nature and complexity of its activities, taking into account the hazards and associated risks inherent in those activities;

(ii) ensure pilot competence by assessing and developing pilot competencies required for a safe, effective and efficient operation of aircraft;

(iii) ensure that each pilot is exposed to the assessment and training topics derived in accordance with ORO.FC.232;

(iv) include at least six EBT modules distributed across a 3-year programme; each EBT module shall consist of an evaluation phase and a training phase. The validity period of a EBT module shall be 12 months;

(A) The evaluation phase comprises a line-orientated flight scenario (or scenarios) to assess all competencies and identify individual training needs.

(B) The training phase comprises:

(a) the manoeuvres training phase, comprising training to proficiency in certain defined manoeuvres;

(b) the scenario-based training phase, comprising a line-orientated flight scenario (or scenarios) to develop competencies and address individual training needs. The training phase shall be conducted in a timely manner after the evaluation phase.

(3) The operator shall ensure that each pilot enrolled in the EBT programme completes:

(i) a minimum of two EBT modules within the validity period of the type rating, separated by a period of not less than 3 months. The EBT module is completed when:

(A) the content of the EBT programme is completed for that EBT module (exposure of the pilot to the assessment and training topics); and

(B) an acceptable level of performance in all observed competencies has been demonstrated;

(ii) line evaluation(s) of competence; and

(iii) ground training.

(4) The operator shall establish an EBT instructor standardisation and concordance assurance programme to ensure that the instructors involved in EBT are properly qualified to perform their tasks.

(i) All instructors must be subject to this programme;

(ii) The operator shall use appropriate methods and metrics to assess concordance;

(iii) The operator shall demonstrate that the instructors have sufficient concordance.

(5) The EBT programme may include contingency procedures for unforeseen circumstances that could affect the delivery of the EBT modules. The operator shall demonstrate the need for those procedures. The procedures shall ensure that a pilot does not continue line operations if the performance observed was below the minimum acceptable level. They may include:

(i) a different separation period between EBT modules; and

(ii) different order of the phases of the EBT module.

(b) COMPETENCY FRAMEWORK

The operator shall use a competency framework for all aspects of assessment and training within an EBT programme. The competency framework shall:

(1) be comprehensive, accurate, and usable;

(2) include observable behaviours required for safe, effective and efficient operations;

(3) include a defined set of competencies, their descriptions and their associated observable behaviours

(c) TRAINING SYSTEM PERFORMANCE

(1) The EBT system performance shall be measured and evaluated through a feedback process in order to:

(i) validate and refine the operator's EBT programme;

(ii) ascertain that the operator's EBT programme develops pilot competencies.

(2) The feedback process shall be included in the operator's management system.

(3) The operator shall develop procedures governing the protection of EBT data.

(d) GRADING SYSTEM

(1) The operator shall use a grading system to assess the pilot competencies. The grading system shall ensure:

(i) a sufficient level of detail to enable accurate and useful measurements of individual performance;

(ii) a performance criterion and a scale for each competency, with a point on the scale which determines the minimum acceptable level to be achieved for the conduct of line operations. The operator shall develop procedures to address low performance of the pilot;

(iii) data integrity;

(iv) data security.

(2) The operator shall verify at regular intervals the accuracy of the grading system against a criterion-referenced system.

(e) SUITABLE TRAINING DEVICES AND VOLUME OF HOURS TO COMPLETE THE OPERATOR'S EBT PROGRAMME

(1) Each EBT module shall be conducted in an FSTD with a qualification level adequate to ensure the correct delivery of the assessment and training topics.

(2) The operator shall provide a sufficient volume of hours in the suitable training device for the pilot to complete the operator's EBT programme. The criteria to determine the volume of the EBT programme are as follows:

(i) The volume corresponds to the size and complexity of the EBT programme;

(ii) The volume is sufficient to complete the EBT programme;

(iii) The volume ensures an effective EBT programme taking into account the recommendations provided by ICAO, and the CAAT;

(iv) The volume corresponds to the technology of the training devices used.

(f) EQUIVALENCY OF MALFUNCTIONS

(1) Each pilot shall receive assessment and training in the management of aircraft system malfunctions.

(2) Aircraft system malfunctions that place a significant demand on a proficient crew shall be organised by reference to the following characteristics:

(i) immediacy;

(ii) complexity;

(iii) degradation of aircraft control;

(iv) loss of instrumentation;

(v) management of consequences.

(3) Each pilot shall be exposed to at least one malfunction for each characteristic at the frequency determined by the table of assessment and training topics.

(4) Demonstrated proficiency in the management of one malfunction is considered equivalent to demonstrated proficiency in the management of other malfunctions with the same characteristics.

(g) EQUIVALENCY OF APPROACHES RELEVANT TO OPERATIONS

(1) The operator shall ensure that each pilot receives regular training in the conduct of approach types and approach methods relevant to operations.

(2) This training shall include approaches that place an additional demand on a proficient crew.

(3) This training shall include the approaches that require specific approval in accordance with TCAR OPS Part SPA.

(h) LINE EVALUATION OF COMPETENCE

(1) Each pilot shall periodically undertake a line evaluation of competence in an aircraft to demonstrate the safe, effective and efficient conduct of normal line operations described in the operations manual.

(2) The validity period of a line evaluation of competence shall be 12 months.

(3) The operator approved for EBT may, with the approval of the CAAT, extend the validity of the line evaluation of competence to:

(i) either 2 years, subject to a risk assessment;

(ii) or 3 years, subject to a feedback process for the monitoring of line operations which identifies threats to the operations, minimises the risks of such threats, and implements measures to manage human error in the operations.

(4) For successful completion of the line evaluation of competence, the pilot shall demonstrate an acceptable level of performance in all observed competencies.

(i) GROUND TRAINING

(1) Every 12 calendar months, each pilot shall undergo:

(i) technical ground training;

(ii) assessment and training on the location and use of all emergency and safety equipment carried on the aircraft.

(2) The operator may, with the approval of the CAAT and subject to a risk assessment, extend the period of assessment and training on the location and use of all emergency and safety equipment carried on the aircraft to 24 months.

ORO.FC.232 - EBT programme assessment and training topics

(a) The operator shall ensure that each pilot is exposed to the assessment and training topics.

(b) The assessment and training topics shall be:

(1) derived from safety and operational data that are used to identify the areas for improvement and prioritisation of pilot training to guide in the construction of suitable EBT programmes;

(2) distributed across a 3-year period at a defined frequency;

(3) relevant to the type or variant of aircraft on which the pilot operates.

ORO.FC.235 - Pilot qualification to operate in either pilot's seat — aeroplanes

(a) Commanders of aeroplanes whose duties require them to operate in either pilot's seat and carry out the duties of a co-pilot, or commanders required to conduct training or checking duties shall complete additional training and checking to ensure that they are proficient in conducting the relevant normal, abnormal and emergency procedures from either seat. Such training and checking shall be specified in the operations manual. The checking may be conducted together with the operator proficiency check prescribed in ORO.FC.230(b) or in the EBT programme prescribed in ORO.FC.231.

(b) The additional training and checking shall include at least the following:

(1) an engine failure during take-off;

(2) a one-engine-inoperative approach and go-around; and

(3) a one-engine-inoperative landing.

(c) The validity period shall be 12 calendar months. For operators with an approved EBT programme, the validity is determined by the assessment and training topics in accordance with ORO.FC.232.

(d) When operating in the co-pilot's seat, the checks required by ORO.FC.230 or the assessment and training required by ORO.FC.231 for operating in the commander's seat shall, in addition, be valid and current.

(e) The pilot relieving the commander shall have demonstrated, concurrent with the operator proficiency checks prescribed in ORO.FC.230(b) or the assessment and training required by ORO.FC.231, practice of drills and procedures that would not normally be his or her responsibility. Where the differences between left- and right-hand seats are not significant, practice may be conducted in either seat.

(f) The pilot, other than the commander, occupying the commander's seat shall demonstrate practice of drills and procedures, concurrent with the operator proficiency checks prescribed in ORO.FC.230(b) or the assessment and training required by ORO.FC.231, which are the commander's responsibility acting as pilot monitoring. Where the differences between left- and right-hand seats are not significant, practice may be conducted in either seat.

ORO.FC.236 - Pilot qualification to operate in either pilot's seat — helicopters

(a) Helicopter pilots whose duties require them to operate in either pilot's seat shall complete additional training and checking to ensure that they are proficient in conducting the relevant normal, abnormal and emergency procedures from either seat. The validity period of this qualification shall be 12 calendar months.

(b) Current FIs or TRIs on the relevant type are considered to fulfil the requirement of point (a) if they have had a FI or TRI activity in the last 6 months on that type and on the helicopter.

ORO.FC.240 - Operation on more than one type or variant

(a) The procedures or operational restrictions for operation on more than one type or variant established in the operations manual and approved by the CAAT shall cover:

(1) the flight crew members' minimum experience level;

(2) the minimum experience level on one type or variant before beginning training for and operation of another type or variant;

(3) the process whereby flight crew qualified on one type or variant will be trained and qualified on another type or variant; and

(4) all applicable recent experience requirements for each type or variant.

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(c) Point (a) shall not apply to operations of performance class B aeroplanes if they are limited to single-pilot classes of reciprocating engine aeroplanes under VFR by day.

ORO.FC.A.245 - Alternative training and qualification programme

GENERAL

(a) The aeroplane operator having appropriate experience may substitute one or more of the following training and checking requirements for flight crew by an alternative training and qualification programme (ATQP), approved by the competent authority:

(1) set out in point SPA.LVO.120 on flight crew training and qualifications;;

(2) set out in point ORO.FC.220 on conversion training and checking;

(3) set out in point ORO.FC.125 on differences training, familiarisation, equipment and procedure training;

(4) set out in point ORO.FC.205 on command course;

(5) set out in point ORO.FC.230 on recurrent training and checking; and

(6) set out in point ORO.FC.240 on operation on more than one type or variant.

(b) The ATQP shall contain training and checking that establishes and maintains at least an equivalent level of proficiency achieved by complying with the provisions of ORO.FC.220 and ORO.FC.230. The level of flight crew training and qualification proficiency shall be demonstrated prior to being granted the ATQP approval by the CAAT.

(c) The operator applying for an ATQP approval shall provide the CAAT with an implementation plan, including a description of the level of flight crew training and qualification proficiency to be achieved.

(d) In addition to the checks required by points ORO.FC.230 and FCL.060 of TCAR PEL Part FCL, each flight crew member shall complete a line oriented evaluation (LOE) conducted in an FSTD. The validity period of an LOE shall be 12 calendar months. The LOE is completed when both of the following conditions are met:

(1) the syllabus of the LOE is completed; and

(2) the flight crew member has demonstrated an acceptable level of performance.

(e) After 2 years of operating with an approved ATQP, the operator may, with the approval of the competent authority, extend the validity periods of the checks referred to in point ORO.FC.230 as follows:

(1) Operator proficiency check to 12 calendar months.

(2) Line check to 24 calendar months.

(3) Emergency and safety equipment checking to 24 calendar monthse.

(f) Each flight crew member shall undergo specific modular CRM training. All major topics of CRM training shall be covered by distributing modular training sessions as evenly as possible over each 3-year period.

(g) The ATQP programme shall include 48 hours on an FSTD for each flight crew member, distributed evenly over a 3-year programme. The operator may reduce the number of FSTD hours, but no lower than 36 hours, provided that it demonstrates that the level of safety that is achieved is equivalent to that of the programme the ATQP may substitute in accordance with point (a).

ORO.FC.A.250 - Commanders holding a CPL(A)

(a) The holder of a CPL(A) (aeroplane) shall only act as commander in commercial air transport on a single-pilot aeroplane if either of the following conditions is met:

(1) when carrying passengers under VFR outside a radius of 50 NM (90 km) from an aerodrome of departure, he/she has a minimum of 500 hours of flight time on aeroplanes or holds a valid instrument rating; or

(2) when operating on a multi-engine type under IFR, he/she has a minimum of 700 hours of flight time on aeroplanes, including 400 hours as pilot-in-command. These hours shall include 100 hours under IFR and 40 hours in multi-engine operations. The 400 hours as pilot-in-command may be substituted by hours operating as co-pilot within an established multi-pilot crew system prescribed in the operations manual, on the basis of two hours of flight time as co-pilot for one hour of flight time as pilot-in command;

(3) when operating on a single-engined aeroplane under IFR, he/she has a minimum of 700 hours of flight time on aeroplanes, including 400 hours as pilot-in-command. Those hours shall include 100 hours under IFR. The 400 hours as pilot-in-command may be substituted by hours operating as co-pilot within an established multi-pilot crew system prescribed in the operations manual, on the basis of two hours of flight time as co-pilot for one hour of flight time as pilot-in command.

(b) For operations under VFR by day of performance class B aeroplanes (a)(1) shall not apply.

ORO.FC.H.250 - Commanders holding a CPL(H)

(a) Holders of a CPL(H) (helicopter) shall only act as commanders in CAT operations on a single-pilot helicopter if:

(1) when operating under IFR, they have a minimum of 700 hours total flight time on helicopters, including 300 hours as pilot-in-command. The total flight time on helicopters shall include 100 hours under IFR. Up to 50 hours instrument time performed on an FFS(H) level B or FTD level 3 qualification or higher qualified for instrument training, may be credited towards the 100 hours. The 300 hours as pilot-in-command may be substituted by hours operating as co-pilot within an established multi-pilot crew system prescribed in the operations manual on the basis of 2 hours of flight time as co-pilot for 1 hour flight time as pilot-in command;

(2) when operating under visual meteorological conditions (VMC) at night, he/she has:

(i) a valid instrument rating; or

(ii) 300 hours of flight time on helicopters, including 100 hours as pilot-in-command and 10 hours as pilot flying at night.

SECTION 3 Additional requirements for commercial specialised operations and CAT operations referred to in ORO.FC.005(b)(1) and (2)

ORO.FC.320 Operator conversion training and checking

The operator conversion course shall include an operator proficiency check.

ORO.FC.325 Equipment and procedure training and checking

If a flight crew member undergoes equipment and procedure training that requires training on a suitable FSTD or the aircraft, with regard to standard operating procedures related to a specialised operation, the flight crew member shall undergo an operator proficiency check.

ORO.FC.330 - Recurrent training and checking — operator proficiency check

(a) Each flight crew member shall complete recurrent training and operator proficiency checks. In the case of specialised operations, the recurrent training and checking shall cover the relevant aspects associated with the specialised tasks described in the operations manual.

(b) Appropriate consideration shall be given when operations are undertaken under IFR or at night.

(c) The validity period of the operator proficiency check shall be 12 calendar months.

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SUBPART CC: CABIN CREW

ORO.CC.005 - Scope

This Subpart establishes the requirements to be met by the operator when operating an aircraft with cabin crew and comprises:

(a) Section 1 specifying common requirements applicable to all operations; and

(b) Section 2 specifying additional requirements only applicable to commercial air transport operations.

SECTION 1 Common requirements

ORO.CC.100 - Number and composition of cabin crew

(a) For the operation of aircraft with an MOPSC of more than 19, at least one cabin crew member shall be assigned when carrying one or more passenger(s).

(b) For the purpose of complying with point (a), the minimum number of cabin crew members shall be the greatest number amongst the following:

(1) the number of cabin crew members established during the aircraft certification process in accordance with the applicable certification specifications, for the aircraft cabin configuration used by the operator;

(2) if the number under point (1) has not been established, the number of cabin crew members established during the aircraft certification process for the maximum certified passenger seating configuration reduced by 1 for every whole multiple of 50 passenger seats of the aircraft cabin configuration used by the operator falling below the maximum certified seating capacity;

(3) one cabin crew member for every 50, or fraction of 50, passenger seats installed on the same deck of the aircraft to be operated.

(c) For operations with more than one cabin crew member, the operator shall nominate one cabin crew member accountable to the pilot-in-command or the commander.

(d) By way of derogation from point (a), non-commercial operations with aircraft with an MOPSC of more than 19 may be performed without an operating cabin crew member, subject to the prior approval by the CAAT. To obtain the approval, the operator shall ensure that all of the following conditions are fulfilled:

(1) there are maximum 19 passengers on board;

(2) the operator has developed procedures for that operation.

ORO.CC.110 - Conditions for assignment to duties

(a) Cabin crew members shall only be assigned to duties on an aircraft if they:

(1) are at least 18 years of age;

(2) have been assessed physically and mentally fit to perform their duties and discharge their responsibilities safely. Medical examinations or assessments are required to be renewed on an annual basis; and

(3) have successfully completed all applicable training and checking required by TCAR OPS Part CC and this Subpart and are competent to perform the assigned duties in accordance with the procedures specified in the operations manual.

(b) Operating cabin crew members, as well as their role with regard to the safety of passengers and flight, shall be clearly identified to the passengers.

ORO.CC.115 - Conduct of training courses and associated checking

(a) A detailed programme and syllabus shall be established by the operator for each training course in accordance with the applicable requirements of this Subpart, and of TCAR OPS Part CC where applicable, to cover the duties and responsibilities to be discharged by the cabin crew members.

(b) Each training course shall include theoretical and practical instruction together with individual or collective practice, as relevant to each training subject, in order that the cabin crew member achieves and maintains the adequate level of proficiency in accordance with this Subpart, and TCAR OPS Part CC.

(c) Each training course shall be:

(1) conducted in a structured and realistic manner; and

(2) performed by personnel appropriately qualified for the subject to be covered, with the qualification specified in Subpart TRC and this Subpart.

(d) During or following completion of all training required by this Subpart, and TCAR OPS Part CC, each cabin crew member shall undergo a check covering all training elements of the relevant training programme, except for crew resource management (CRM) training. Checks shall be performed by personnel appropriately qualified to verify that the cabin crew member has achieved and/or maintains the required level of proficiency.

(e) CRM training courses and CRM modules where applicable shall be conducted by a cabin crew CRM instructor. When CRM elements are integrated in other training, a cabin crew CRM instructor shall manage the definition and implementation of the syllabus.

ORO.CC.120 - Initial training course

(a) Each new entrant who does not already hold a valid cabin crew initial training certificate issued in accordance with TCAR OPS Part CC:

(1) shall be provided with an initial training course as specified in CC.TRA.220 of TCAR OPS Part CC; and

(2) shall successfully undergo the associated examination before undertaking other training required by this Subpart.

(b) Elements of the initial training programme may be combined with the first aircraft type specific training and operator conversion training, provided that the requirements of CC.TRA.220 of TCAR OPS Part CC are met and any such element(s) are recorded as elements of the initial training course in the training records of the cabin crew members concerned.

ORO.CC.125 - Aircraft type specific training and operator conversion training

(a) Each cabin crew member shall have completed appropriate aircraft type specific training and operator conversion training, as well as the associated checks, before being:

(1) first assigned by the operator to operate as a cabin crew member; or

(2) assigned by that operator to operate on another aircraft type.

(b) When establishing the aircraft type specific and the operator conversion training programmes and syllabi, the operator shall include, where available, the relevant elements defined in the mandatory part of the operational suitability data established in accordance with EASA Part 21 or any equivalent material established in accordance with Type certification regulations acceptable to the CAAT.

(c) The aircraft type specific training programme shall:

(1) involve training and practice on a representative training device or on the actual aircraft; and

(2) cover at least the following aircraft type specific training elements:

(i) aircraft description as relevant to cabin crew duties;

(ii) all safety equipment and systems installed relevant to cabin crew duties;

(iii) operation and actual opening, by each cabin crew member, of each type or variant of normal and emergency doors and exits in the normal and emergency modes;

(iv) demonstration of the operation of the other exits including flight crew compartment windows;

(v) fire and smoke protection equipment where installed;

(vi) evacuation slide training, where fitted;

(vii) operation of the seat, restraint system and oxygen system equipment relevant to pilot incapacitation.

(d) The operator conversion training programme for each aircraft type to be operated shall:

(1) involve training and practice on a representative training device or on the actual aircraft;

(2) include training in the operator's standard operating procedures for cabin crew members to be first assigned to duties by the operator;

(3) cover at least the following operator specific training elements as relevant to the aircraft type to be operated:

(i) description of the cabin configuration;

(ii) location, removal and use of all portable safety and emergency equipment carried on-board;

(iii) all normal and emergency procedures;

(iv) passenger handling and crowd control;

(v) fire and smoke training including the use of all related fire-fighting and protective equipment representative of that carried on-board;

(vi) evacuation procedures;

(vii) pilot incapacitation procedures;

(viii) applicable security requirements and procedures;

(ix) crew resource management.

ORO.CC.130 - Differences training

(a) In addition to the training required in ORO.CC.125, the cabin crew member shall complete appropriate training and checking covering any differences before being assigned on:

(1) a variant of an aircraft type currently operated; or

(2) a currently operated aircraft type or variant with different:

(i) safety equipment;

(ii) safety and emergency equipment location; or

(iii) normal and emergency procedures.

(b) The differences training programme shall:

(1) be determined as necessary on the basis of a comparison with the training programme completed by the cabin crew member, in accordance with ORO.CC.125(c) and (d), for the relevant aircraft type; and

(2) involve training and practice in a representative training device or the actual aircraft as relevant to the difference training element to be covered.

(c) When establishing a differences training programme and syllabus for a variant of an aircraft type currently operated, the operator shall include, where available, the relevant elements defined in the mandatory part of the operational suitability data established in accordance with EASA, Part 21 or any equivalent material established in accordance with certification regulations acceptable to the CAAT.

ORO.CC.135 - Familiarisation

After completion of aircraft type specific training and operator conversion training on an aircraft type, each cabin crew member shall complete appropriate supervised familiarisation on the type before being assigned to operate as a member of the minimum number of cabin crew required in accordance with ORO.CC.100.

ORO.CC.140 - Recurrent training

(a) Each cabin crew member shall complete annually recurrent training and checking.

(b) Recurrent training shall cover the actions assigned to each member of the cabin crew in normal and emergency procedures and drills relevant to each aircraft type and/or variant to be operated.

(c) Aircraft type specific training elements:

(1) Recurrent training shall include annually touch-drills by each cabin crew member for simulating the operation of each type or variant of normal and emergency doors and exits for passenger evacuation.

(2) Recurrent training shall also include at intervals not exceeding three years:

(i) operation and actual opening by each cabin crew member, in a representative training device or in the actual aircraft, of each type or variant of normal and emergency exits in the normal and emergency modes;

(ii) actual operation by each cabin crew member, in a representative training device or in the actual aircraft, of the flight crew compartment security door, in both normal and emergency modes, and of the seat and restraint system, and a practical demonstration of the oxygen system equipment relevant to pilot incapacitation;

(iii) demonstration of the operation of all other exits including the flight crew compartment windows; and

(iv) demonstration of the use of the life-raft, or slide raft, where fitted.

(d) Operator specific training elements:

(1) Recurrent training shall include annually:

(i) by each cabin crew member:

(A) location and handling of all safety and emergency equipment installed or carried on board; and

(B) the donning of life-jackets, portable oxygen and protective breathing equipment (PBE);

(ii) stowage of articles in the passenger compartment;

(iii) procedures related to aircraft surface contamination;

(iv) emergency procedures;

(v) evacuation procedures;

(vi) incident and accident review;

(vii) crew resource management;

(viii) aero-medical aspects and first aid including related equipment;

(ix) security procedures.

(2) Recurrent training shall also include at intervals not exceeding three years:

(i) use of pyrotechnics (actual or representative devices);

(ii) practical demonstration of the use of flight crew checklists;

(iii) realistic and practical training in the use of all fire-fighting equipment, including protective clothing, representative of that carried in the aircraft;

(iv) by each cabin crew member:

(A) extinguishing a fire characteristic of an aircraft interior fire;

(B) donning and use of PBE in an enclosed simulated smoke-filled environment.

(e) Validity periods:

(1) The annual recurrent training validity period shall be 12 calendar months counted from the end of the month when the check was taken.

(2) If the recurrent training and checking required in (a) are undertaken within the last three calendar months of the validity period, the new validity period shall be counted from the original expiry date.

(3) For the additional triennial training elements specified in (c)(2) and (d)(2), the validity period shall be 36 calendar months counted from the end of the month when the checks were taken.

ORO.CC.145 - Refresher training

(a) When a cabin crew member, during the preceding six months within the validity period of the last relevant recurrent training and checking:

(1) has not performed any flying duties, he/she shall, before being reassigned to such duties, complete refresher training and checking for each aircraft type to be operated; or

(2) has not performed flying duties on one particular aircraft type, he/she shall, before being reassigned to duties, complete on that aircraft type:

(i) refresher training and checking; or

(ii) two familiarisation flights in accordance with ORO.CC.135.

(b) The refresher training programme for each aircraft type shall at least cover:

(1) emergency procedures;

(2) evacuation procedures;

(3) operation and actual opening, by each cabin crew member, of each type or variant of normal and emergency exits and of the flight crew compartment security door in the normal and emergency modes;

(4) demonstration of the operation of all other exits including the flight crew compartment windows;

(5) location and handling of all relevant safety and emergency equipment installed or carried on-board.

(c) The operator may elect to replace refresher training by recurrent training if the reinstatement of the cabin crew member's flying duties commences within the validity period of the last recurrent training and checking. If that validity period has expired, refresher training may only be replaced by aircraft type specific and operator conversion training as specified in ORO.CC.125.

SECTION 2 Additional requirements for commercial air transport operations

ORO.CC.200 - Senior cabin crew member

(a) When more than one cabin crew member is required, the composition of the cabin crew shall include a senior cabin crew member nominated by the operator.

(b) The operator shall nominate cabin crew members to the position of senior cabin crew member only if they:

(1) have at least one year of experience as operating cabin crew member; and

(2) have successfully completed a senior cabin crew training course and the associated check.

(c) The senior cabin crew training course shall cover all duties and responsibilities of senior cabin crew members and shall include at least the following elements:

(1) pre-flight briefing;

(2) cooperation with the crew;

(3) review of operator requirements and legal requirements;

(4) accident and incident reporting;

(5) human factors and crew resource management (CRM); and

(6) flight and duty time limitations and rest requirements.

(d) The senior cabin crew member shall be responsible to the commander for the conduct and coordination of normal and emergency procedures specified in the operations manual, including for discontinuing non-safety-related duties for safety or security purposes.

(e) The operator shall establish procedures to select the most appropriately qualified cabin crew member to act as senior cabin crew member if the nominated senior cabin crew member becomes unable to operate. Changes to these procedures shall be notified to the CAAT.

ORO.CC.205 - Reduction of the number of cabin crew during ground operations and in unforeseen circumstances

(a) Whenever passengers are on board an aircraft, the minimum number of cabin crew required in accordance with ORO.CC.100 shall be present in the aircraft and ready to act.

(b) By way of derogation from point (a), the minimum number of cabin crew members may be reduced in either of the following cases:

(1) during normal ground operations not involving refuelling or defuelling when the aircraft is at its parking station; or

(2) in unforeseen circumstances if the number of passengers carried on the flight is reduced. In this case a report shall be submitted to the CAAT after completion of the flight.

(3) for the purpose of providing in-flight rest during the cruise phase, either in accordance with point ORO.FTL.205(e) or as a fatigue mitigation implemented by the operator.

(c) For the purposes of points (b)(1) and (b)(2), the operator's procedures of the operations manual shall ensure that:

(1) an equivalent level of safety is achieved with the reduced number of cabin crew members, in particular for evacuation of passengers;

(2) despite the reduced number of cabin crew members a senior cabin crew member is present in accordance with point ORO.CC.200;

(3) at least one cabin crew member is required for every 50, or fraction of 50, passengers present on the same deck of the aircraft;

(4) in the case of normal ground operations with aircraft requiring more than one cabin crew member, the number determined in accordance with point (3) shall be increased by one cabin crew member per each pair of floor level emergency exits.

(d) For the purposes of point (b)(3), the operator shall:

(1) conduct a risk assessment to determine the number of cabin crew members who are to be present and ready to act at all times during cruise;

(2) identify measures to mitigate the effects of having a lower number of cabin crew members being present and ready to act during cruise;

(3) establish in the operations manual specific procedures, including for the in-flight rest of the senior cabin crew member, that ensure at all times appropriate passenger handling and efficient management of any abnormal or emergency situations;

(4) specify, in the flight time specification scheme in accordance with point ORO.FTL.125, the conditions under which in-flight rest may be provided to the cabin crew members

ORO.CC.210 - Additional conditions for assignment to duties

Cabin crew members shall only be assigned to duties, and operate, on a particular aircraft type or variant if they:

(a) hold a valid certificate issued in accordance with TCAR OPS Part CC.

(b) are qualified on the type or variant in accordance with this Subpart;

(c) comply with the other applicable requirements of this Subpart and TCAR OPS Part CAT;

(d) wear the operator’s cabin crew uniform.

ORO.CC.215 - Training and checking programmes and related documentation

(a) Training and checking programmes including syllabi required by this Subpart, and TCAR OPS Part CC shall be approved by the CAAT and specified in the operations manual.

(b) After a cabin crew member has successfully completed a training course and the associated check, the operator shall:

(1) update the cabin crew member’s training records in accordance with ORO.MLR.115; and

(2) provide him/her with a list showing updated validity periods as relevant to the aircraft type(s) and variant(s) on which the cabin crew member is qualified to operate.

ORO.CC.250 - Operation on more than one aircraft type or variant

(a) A cabin crew member shall not be assigned to operate on more than three aircraft types, except that, with the approval of the CAAT, the cabin crew member may be assigned to operate on four aircraft types if for at least two of the types:

(1) safety and emergency equipment and type-specific normal and emergency procedures are similar; and

(2) non-type-specific normal and emergency procedures are identical.

(b) For the purpose of (a) and for cabin crew training and qualifications, the operator shall determine:

(1) each aircraft as a type or a variant taking into account, where available, the relevant elements defined in the mandatory part of the operational suitability data established in accordance with EASA, Part 21 or any equivalent material established in accordance with certification regulations acceptable to the CAAT for the relevant aircraft type or variant; and

(2) variants of an aircraft type to be different types if they are not similar in the following aspects:

(i) emergency exit operation;

(ii) location and type of portable safety and emergency equipment;

(iii) type-specific emergency procedures.

ORO.CC.255 - Single cabin crew member operations

(a) The operator shall select, recruit, train and check the proficiency of cabin crew members to be assigned to single cabin crew member operations according to criteria appropriate to this type of operation.

(b) Cabin crew members who have no previous operating experience as single cabin crew member shall only be assigned to such type of operation after they have:

(1) completed training as required in (c) in addition to other applicable training and checking required by this Subpart;

(2) successfully passed the checks verifying their proficiency in discharging their duties and responsibilities in accordance with the procedures specified in the operations manual; and

(3) undertaken familiarisation flying of at least 20 hours and 15 sectors on the relevant aircraft type under the supervision of an appropriately experienced cabin crew member.

(c) The following additional training elements shall be covered with particular emphasis to reflect single cabin crew operations:

(1) responsibility to the commander for the conduct of normal and emergency procedures;

(2) importance of coordination and communication with the flight crew, in particular when managing unruly or disruptive passengers;

(3) review of operator requirements and legal requirements;

(4) documentation;

(5) accident and incident reporting; and

(6) flight and duty time limitations and rest requirements.

SUBPART TC: TECHNICAL CREW IN HEMS, HHO OR NVIS OPERATIONS

ORO.TC.100 - Scope

This Subpart establishes the requirements to be met by the operator when operating an aircraft with technical crew members in commercial air transport helicopter emergency medical service (HEMS), night vision imaging system (NVIS) operations or helicopter hoist operations (HHO).

ORO.TC.105 - Conditions for assignment to duties

(a) Technical crew members in commercial air transport HEMS, HHO or NVIS operations shall only be assigned duties if they:

(1) are at least 18 years of age;

(2) are physically and mentally fit to safely discharge assigned duties and responsibilities;

(3) have completed all applicable training required by this Subpart to perform the assigned duties;

(4) have been checked as proficient to perform all assigned duties in accordance with the procedures specified in the operations manual.

(b) Before assigning to duties technical crew members who are self-employed and/or working on a freelance or part-time basis, the operator shall verify that all applicable requirements of this Subpart are complied with, taking into account all services rendered by the technical crew member to other operator(s) to determine in particular:

(1) the total number of aircraft types and variants operated;

(2) the applicable flight and duty time limitations and rest requirements.

ORO.TC.110 - Training and checking

(a) The operator shall establish a training programme in accordance with the applicable requirements of this Subpart to cover the duties and responsibilities to be performed by technical crew members.

(b) Following the completion of initial, operator conversion, differences and recurrent training, each technical crew member shall undergo a check to demonstrate their proficiency in carrying out normal and emergency procedures.

(c) Training and checking shall be conducted for each training course by personnel suitably qualified and experienced in the subject to be covered. The operator shall inform the CAAT about the personnel conducting the checks.

ORO.TC.115 - Initial training

Before undertaking the operator conversion training, each technical crew member shall complete initial training, including:

(a) general theoretical knowledge on aviation and aviation regulations covering all elements relevant to the duties and responsibilities required of technical crew;

(b) fire and smoke training;

(c) survival training on ground and in water, appropriate to the type and area of operation;

(d) aero-medical aspects and first-aid;

(e) communication and relevant CRM elements of ORO.FC.115 and ORO.FC.215.

ORO.TC.120 - Operator conversion training

Each technical crew member shall complete:

(a) operator conversion training, including relevant CRM elements,

(1) before being first assigned by the operator as a technical crew member; or

(2) when changing to a different aircraft type or class, if any of the equipment or procedures mentioned in (b) are different.

(b) Operator conversion training shall include:

(1) the location and use of all safety and survival equipment carried on the aircraft;

(2) all normal and emergency procedures;

(3) on-board equipment used to carry out duties in the aircraft or on the ground for the purpose of assisting the pilot during HEMS, HHO or NVIS operations.

ORO.TC.125 - Differences training

(a) Each technical crew member shall complete differences training when changing equipment or procedures on types or variants currently operated.

(b) The operator shall specify in the operations manual when such differences training is required.

ORO.TC.130 - Familiarisation flights

Following completion of the operator conversion training, each technical crew member shall undertake familiarisation flights prior to operating as a required technical crew member in HEMS, HHO or NVIS operations.

ORO.TC.135 - Recurrent training

(a) Within every 12-month period, each technical crew member shall undergo recurrent training relevant to the type or class of aircraft and equipment that the technical crew member operates. Elements of CRM shall be integrated into all appropriate phases of the recurrent training.

(b) Recurrent training shall include theoretical and practical instruction and practice.

ORO.TC.140 - Refresher training

(a) Each technical crew member who has not undertaken duties in the previous six months shall complete the refresher training specified in the operations manual.

(b) The technical crew member who has not performed flying duties on one particular aircraft type or class during the preceding six months shall, before being assigned on that type or class, complete either:

(1) refresher training on the type or class; or

(2) two familiarisation sectors on the aircraft type or class.

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SUBPART FOO/FD: Flight Operations Officer/Flight Dispatcher

ORO.FOO/FD.005 – Scope

This Subpart establishes the requirements to be followed by a Kingdom of Thailand Air Operator when employs flight operations officer/flight dispatcher in conjunction with a method of operational control and supervision.

ORO.FOO/FD.010 – Duties of the Flight Operations Officer/Flight Dispatcher

(a) A flight operations officer/flight dispatcher in conjunction with a method of control and supervision of flight operations shall:

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

(2) assist the pilot-in-command in preparing the operational and ATS flight plans, sign when applicable and file the ATS flight plan with the appropriate ATS unit;

(3) furnish the pilot-in-command while in flight, by appropriate means, with information which may be necessary for the safe conduct of the flight; and

(4) notify the appropriate ATS unit when the position of the aeroplane cannot be determined by an aircraft tracking capability, and attempts to establish communication are unsuccessful.

(b) In the event of an emergency, a flight operations officer/flight dispatcher shall:

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

(2) convey safety-related information to the pilot-in-command that may be necessary for the safe conduct of the flight, including information related to any amendments to the flight plan that become necessary in the course of the flight.

(3) Where necessary, notify the appropriate authorities without delay and request for assistance if required, if the emergency endangers the safety of the aircraft or persons and becomes known first to the flight operations officer/flight dispatcher.

ORO.FOO/FD.100 – Flight Operations Officer Initial Training Programmes under AOC Holder

CAT operator shall ensure that personnel employed to perform operational control duties within the organisation have completed a flight operations officer training programme in accordance with TCAR PEL or equivalent flight operations officers initial training programme under this subpart.

(a) Flight operations officer initial training programme shall be established in accordance with the applicable requirements of this Subpart to cover the duties and responsibilities to be performed by Flight Operations Officer. The training and checking programmes shall be approved by the CAAT before conducting the training.

(b) Flight operations officer initial training programme shall be included applied practical training (on-the-job training: OJT), which includes at least one familiarisation flight in the flight crew compartment of an aircraft over any area for which that individual is authorised to exercise operations control.

(c) Once the flight operations officer initial training programme has been completed, an initial proficiency check shall be conducted by the flight operations officer/flight dispatcher examiner nominated by the operator to demonstrate the proficiency.

ORO.FOO/FD.105 – Recent experience

(a) A flight operations officer/flight dispatcher shall have an appropriate recent experience.

(b) For CAT operations, the minimum acceptable recent experience is to have dispatched at least one flight within the last 90 calendar days. A flight operations officer/flight dispatcher who does not meet this minimum experience requirement shall dispatch at least one flight under the supervision of a current flight operations officer/flight dispatcher before resuming the exercise of their privileges.

(c) Flight operations officer/flight dispatcher shall not be assigned to duties after 12 consecutive months of absence from their assigned role. In such cases, FOO/FD shall undergo adequate refresher or recurrent training as defined by the operator and pass a proficiency check conducted by a FOO/FD examiner nominated by the operator.

ORO.FOO/FD.110 – Operator Conversion (Operator-Specific) Training

(a) The flight operations officer/flight dispatcher or operational control personnel, when joining an operator, shall complete the operator conversion training course before commencing the operations control duties without supervision.

(b) The operator conversion training course shall be delivered by the operator in accordance with the training syllabus approved by the CAAT.

(c) The operator conversion training course shall contain the technical specificity related to at least one aircraft type or class operated by the operator.

ORO.FOO/FD.115 – Differences training and familiarisation training

(a) The flight operations officer/flight dispatcher or operational control personnel shall undergo differences training or familiarisation training when changing to a new aircraft type or class, including cases where there are changes in equipment and procedures related to their current use.

(b) The differences training shall include both theoretical and practical components, while the familiarisation training may involve only theoretical training.

(c) The operations manual shall specify when such differences or familiarisation trainings including checking upon completion of the programme, are required.

ORO.FOO/FD.120 – Recurrent training and checking

(a) Recurrent training shall be given to each flight operations officer/flight dispatcher and other operational control personnel by an instructor nominated by the operator.

(b) Recurrent training shall cover those subjects specified in the flight operations officer (initial) training programme and operator conversion training course, as well as the technical elements for each aircraft type or variant the FOO/FD and other operational control personnel is performing the operations control at least once every 36 months.

(c) FOO/FD and other operational control personnel shall complete familiarisation flight at least once every 12 months.

(d) Annual recurrent proficiency check shall be conducted to demonstrate competencies are maintained. The validity period of recurrent training and checking shall valid 12 month.

ORO.FOO/FD.125 – New route/destination training

When the operator introduces a new route and/or destination that requires different procedures and additional knowledge, a FOO/FD or operational control personnel shall undergo a new route/destination familiarisation training before conducting the duties related to new route/destination.

ORO.FOO/FD.130 – Personnel providing training, checking and assessment

(a) All training, checking and assessment required in this Subpart shall be conducted by appropriately qualified personnel nominated by the operator.

(b) Prior experience may be considered in the selection and qualification criteria for instructors, examiners and assessors responsible for delivering the required training, checking, and assessment under this subpart.

ORO.FOO/FD.131. – Provision of training, checking and assessment

(a) All training, checking and assessment required in this Subpart shall be conducted in accordance with the training programmes and syllabi established by the operator in the operations manual.

(b) The validity periods required in this Subpart shall be counted from the end of the month in which the training or check was completed

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SUBPART FTL: FLIGHT AND DUTY TIME LIMITATIONS AND REST REQUIREMENTS

SECTION 1 General

ORO.FTL.100 - Scope

This Subpart establishes the requirements to be met by an operator and its crew members with regard to flight and duty time limitations and rest requirements for crew members.

ORO.FTL.105 - Definitions

For the purpose of this Subpart, the following definitions shall apply:

(1) 'acclimatised' means a state in which a crew member's circadian biological clock is synchronised to the time zone where the crew member is. A crew member is considered to be acclimatised to a 2-hour wide time zone surrounding the local time at the point of departure. When the local time at the place where a duty commences differs by more than 2 hours from the local time at the place where the next duty starts, the crew member, for the calculation of the maximum daily flight duty period, is considered to be acclimatised in accordance with the values in the Table 1.

Table 1

Time difference (h) between reference time and local time where the crew member starts the next duty	**Time elapsed since reporting at reference time**				
	<48	**48–71:59**	**72–95:59**	**96–119:59**	**≥120**
< 4	B	D	D	D	D
≥ 4 and ≤ 6	B	X	D	D	D
> 6 and ≤ 9	B	X	X	D	D
> 9 and ≤ 12	B	X	X	X	D

'B' means acclimatised to the local time of the departure time zone,

'D' means acclimatised to the local time where the crew member starts his/her next duty, and

'X' means that a crew member is in an unknown state of acclimatisation.

(2) 'reference time' means the local time at the reporting point situated in a 2-hour wide time zone band around the local time where a crew member is acclimatised;

(3) 'accommodation' means, for the purpose of standby and split duty, a quiet and comfortable place not open to the public with the ability to control light and temperature, equipped with adequate furniture that provides a crew member with the possibility to sleep, with enough capacity to accommodate all crew members present at the same time and with access to food and drink;

(4) 'suitable accommodation' means, for the purpose of standby, split duty and rest, a room located in a quiet environment and equipped with a bed, which is sufficiently ventilated, has a device for regulating temperature and light intensity, and access to food and drink;

(5) 'augmented flight crew' means a flight crew which comprises more than the minimum number required to operate the aircraft, allowing each flight crew member to leave the assigned post, for the purpose of in-flight rest, and to be replaced by another appropriately qualified flight crew member;

(6) 'break' means a period of time within an flight duty period, shorter than a rest period, counting as duty and during which a crew member is free of all tasks;

(7) 'delayed reporting' means the postponement of a scheduled FDP by the operator before a crew member has left the place of rest;

(8) 'disruptive schedule' means a crew member's roster which disrupts the sleep opportunity during the optimal sleep time window by comprising an FDP or a combination of FDPs which encroach, start or finish during any portion of the day or of the night where a crew member is acclimatised. A schedule may be disruptive due to early starts, late finishes or night duties according to the following period of 'early type' of disruptive schedule :

(i) for 'early start' a duty period starting in the period between 05:00 and 05:59 in the time zone to which a crew member is acclimatised, and

(ii) for 'late finish' a duty period finishing in the period between 23:00 and 01:59 in the time zone to which a crew member is acclimatised;

(9) 'night duty' means a duty period encroaching any portion of the period between 02:00 and 04:59 in the time zone to which the crew is acclimatised;

(10) 'duty' means any task that a crew member performs for the operator, including flight duty, administrative work, giving or receiving training and checking, positioning, and some elements of standby;

(11) 'duty period' means a period which starts when a crew member is required by an operator to report for or to commence a duty and ends when that person is free of all duties, including post- flight duty;

(12) 'flight duty period ('FDP')' means a period that commences when a crew member is required to report for duty, which includes a sector or a series of sectors, and finishes when the aircraft finally comes to rest and the engines are shut down, at the end of the last sector on which the crew member acts as an operating crew member;

(13) 'flight time' means, for aeroplanes, the time between an aircraft first moving from its parking place for the purpose of taking off until it comes to rest on the designated parking position and all engines or propellers are shut down.

(14) 'home base' means the location, assigned by the operator to the crew member, from where the crew member normally starts and ends a duty period or a series of duty periods and where, under normal circumstances, the operator is not responsible for the accommodation of the crew member concerned;

(15) 'local day' means a 24-hour period commencing at 00:00 local time;

(16) 'local night' means a period of 8 hours falling between 22:00 and 08:00 local time;

(17) 'operating crew member' means a crew member carrying out duties in an aircraft during a sector;

(18) 'positioning' means the transferring of a non-operating crew member from one place to another, at the behest of the operator, excluding:

— the time of travel from a private place of rest to the designated reporting place at home base and vice versa, and
— the time for local transfer from a place of rest to the commencement of duty and vice versa;

(19) 'rest facility' means a bunk or seat with leg and foot support suitable for crew members' sleeping on board an aircraft.

(20) 'reserve' means a period of time during which a crew member is required by the operator to be available to receive an assignment for an FDP, positioning or other duty notified at least 10 hours in advance.

(21) 'rest period' means a continuous, uninterrupted and defined period of time, following duty or prior to duty, during which a crew member is free of all duties, standby and reserve.

(22) 'rotation' is a duty or a series of duties, including at least one flight duty, and rest periods out of home base, starting at home base and ending when returning to home base for a rest period where the operator is no longer responsible for the accommodation of the crew member.

(23) 'single day free of duty' means, a time free of all duties and standby consisting of one day and two local nights, which is notified in advance. A rest period may be included as part of the single day free of duty.

(24) 'sector' means the segment of an FDP between an aircraft first moving for the purpose of taking off until it comes to rest after landing on the designated parking position.

(25) 'standby' means a pre-notified and defined period of time during which a crew member is required by the operator to be available to receive an assignment for a flight, positioning or other duty without an intervening rest period.

(26) 'airport standby' means a standby performed at the airport;

(27) 'other standby' means a standby either at home or in a suitable accommodation;

(28) 'window of circadian low ('WOCL') means the period between 02:00 and 05:59 hours in the time zone to which a crew member is acclimatised.

(29) 'unforeseen operational circumstance' is an unexpected condition that could not reasonably have been predicted and accommodated, such as bad weather or equipment malfunction, which may result in necessary on-the-day operational adjustments.

(30) 'Eastward-Westward and Westward-Eastward transition' means the transition at home base between a rotation in one direction and a rotation in the opposite direction.

ORO.FTL.110 - Operator responsibilities

An operator shall:

(a) publish duty rosters sufficiently in advance to provide the opportunity for crew members to plan adequate rest;

(b) ensure that flight duty periods are planned in a way that enables crew members to remain sufficiently free from fatigue so that they can operate to a satisfactory level of safety and manage their workload under all circumstances;

(c) specify reporting times that allow sufficient time for ground duties;

(d) take into account the relationship between the frequency and pattern of flight duty periods and rest periods and give consideration to the cumulative effects of undertaking long duty hours combined with minimum rest periods;

(e) allocate duty patterns which avoid practices that cause a serious disruption of an established sleep/work pattern, such as alternating day/night duties;

(f) comply with the provisions concerning disruptive schedules;

(g) provide rest periods of sufficient time to enable crew members to overcome the effects of the previous duties and to be rested by the start of the following flight duty period and provide accommodation or suitable accommodation as appropriate to the operations;

(h) plan recurrent extended recovery rest periods and notify crew members sufficiently in advance;

(i) plan flight duties in order to be completed within the allowable flight duty period taking into account the time necessary for pre-flight duties, the sector and turnaround times;

(j) change a schedule and/or crew arrangements if the actual operation exceeds the maximum flight duty period on more than 33% of the flight duties in that schedule during a scheduled seasonal period.

(k) Establish the procedures that ensure crew arrangements and day-to-day operational practices are compliant with Individual Flight Time Specification Schemes (IFTSS).

(l) Establish a fatigue reporting process that complies with applicable regulatory requirements. This reporting process shall enable the operational personnel to raise legitimate concerns regarding fatigue without fear of retribution or punishment from both within and outside the organization.

ORO.FTL.115 - Crew member responsibilities

Crew members shall:

(a) comply with point CAT.GEN.MPA.100 (b) of TCAR OPS Part CAT; and

(b) make optimum use of the opportunities and facilities for rest provided and plan and use their rest periods properly.

ORO.FTL.120 - Fatigue Risk Management (FRM)

(a) When FRM is required by ORO.FTL or an applicable certification specification, the operator shall establish, implement and maintain a FRM as an integral part of its management system. The FRM shall ensure compliance with the Air Navigation Act B.E.2497, Kingdom of Thailand Civil Aviation Regulations and other relevant national provision. The FRM shall be described in the operations manual.

(b) The FRM established, implemented and maintained shall provide for continuous improvement to the overall performance of the FRM and shall include:

a description of the philosophy and principles of the operator with regard to FRM, referred to as the FRM policy;

(1) documentation of the FRM processes, including a process for making personnel aware of their responsibilities and the procedure for amending this documentation;

(2) scientific principles and knowledge;

(3) a hazard identification and risk assessment process that allows managing the operational risk(s) of the operator arising from crew member fatigue on a continuous basis;

(4) a risk mitigation process that provides for remedial actions to be implemented promptly, which are necessary to effectively mitigate the operator's risk(s) arising from crew member fatigue and for continuous monitoring and regular assessment of the mitigation of fatigue risks achieved by such actions;

(5) FRM safety assurance processes;

(6) FRM promotion processes.

(c) The FRM shall correspond to the flight time specification scheme, the size of the operator and the nature and complexity of its activities, taking into account the hazards and associated risks inherent in those activities and the applicable flight time specification scheme.

(d) The operator shall take mitigating actions when the FRM safety assurance process shows that the required safety performance is not maintained.

ORO.FTL.125 - Flight time specification schemes

(a) Operators shall establish, implement and maintain flight time specification schemes that are appropriate for the type(s) of operation performed and that comply with the air operations requirements of the Air Navigation Act B.E 2497, this Subpart and Kingdom of Thailand Civil Aviation Regulations and other applicable legislation;

(b) Before being implemented, flight time specification schemes, including any related FRM where required, shall be approved by the CAAT.

(c) To demonstrate compliance with the Air Navigation Act B.E 2497, TCAR OPS, and this Subpart, the operator shall apply the applicable certification specifications requirements. Alternatively, if the operator wants to deviate from those certification specifications, the operator shall provide the CAAT with a full description of the intended deviation prior to implementing it. The description shall include any revisions to manuals or procedures that may be relevant, as well as an assessment demonstrating that the requirements are met and proving that level of safety equivalent to, or better than, the prescriptive fatigue management requirements.

(d) Within 2 years of the implementation of a deviation,the operator shall collect data concerning the granted deviation or derogation and analyse that data using scientific principles with a view to assessing the effects of the deviation or derogation on aircrew fatigue. Such analysis shall be provided in the form of a report to the CAAT.

SECTION 2 Commercial Air Transport Operators

ORO.FTL.200 - Home base

An operator shall assign a home base to each crew member.

ORO.FTL.205 - Flight duty period (FDP)

(a) The operator shall:

(1) define reporting times appropriate to each individual operation taking into account ORO.FTL.110(c);

(2) establish procedures specifying how the commander shall, in case of special circumstances which could lead to severe fatigue, and after consultation with the crew members concerned, reduce the actual FDP and/or increase the rest period in order to eliminate any detrimental effect on flight safety.

(b) Basic maximum daily FDP.

(1) The maximum daily FDP without the use of extensions for acclimatised crew members shall be in accordance with the following table:

Table 2
Maximum daily FDP – Acclimatised crew members

Start of FDP at reference time	1–2 Sectors	3 Sectors	4 Sectors	5 Sectors	6 Sectors	7 Sectors	8 Sectors	9 Sectors	10 Sectors
0600–1329	13:00	12:30	12:00	11:30	11:00	10:30	10:00	09:30	09:00
1330–1359	12:45	12:15	11:45	11:15	10:45	10:15	09:45	09:15	09:00
1400–1429	12:30	12:00	11:30	11:00	10:30	10:00	09:30	09:00	09:00
1430–1459	12:15	11:45	11:15	10:45	10:15	09:45	09:15	09:00	09:00
1500–1529	12:00	11:30	11:00	10:30	10:00	09:30	09:00	09:00	09:00
1530–1559	11:45	11:15	10:45	10:15	09:45	09:15	09:00	09:00	09:00
1600–1629	11:30	11:00	10:30	10:00	09:30	09:00	09:00	09:00	09:00
1630–1659	11:15	10:45	10:15	09:45	09:15	09:00	09:00	09:00	09:00
1700–0459	11:00	10:30	10:00	09:30	09:00	09:00	09:00	09:00	09:00
0500–0514	12:00	11:30	11:00	10:30	10:00	09:30	09:00	09:00	09:00
0515–0529	12:15	11:45	11:15	10:45	10:15	09:45	09:15	09:00	09:00
0530–0544	12:30	12:00	11:30	11:00	10:30	10:00	09:30	09:00	09:00
0545–0559	12:45	12:15	11:45	11:15	10:45	10:15	09:45	09:15	09:00

(2) The maximum daily FDP when crew members are in an unknown state of acclimatisation shall be in accordance with the following table:

Table 3

Crew members in an unknown state of acclimatisation

Maximum daily FDP according to sectors						
1–2	3	4	5	6	7	8
11:00	10:30	10:00	09:30	09:00	09:00	09:00

(3) The maximum daily FDP when crew members are in an unknown state of acclimatisation and the operator has implemented a FRM, shall be in accordance with the following table:

Table 4

Crew members in an unknown state of acclimatisation under FRM

The values in the following table may apply provided the operator's FRM continuously monitors that the required safety performance is maintained.

Maximum daily FDP according to sectors						
1–2	3	4	5	6	7	8
12:00	11:30	11:00	10:30	10:00	09:30	09:00

(c) FDP with different reporting time for flight crew and cabin crew.

Whenever cabin crew requires more time than the flight crew for their pre-flight briefing for the same sector or series of sectors, the FDP of the cabin crew may be extended by the difference in reporting time between the cabin crew and the flight crew. The difference shall not exceed 1 hour. The maximum daily FDP for cabin crew shall be based on the time at which the flight crew report for their FDP, but the FDP shall start at the reporting time of the cabin crew.

(d) Maximum daily FDP for acclimatised crew members with the use of extensions without in-flight rest.

(1) The maximum daily FDP may be extended by up to 1 hour not more than twice in any 7 consecutive days. In that case:

(i) the minimum pre-flight and post-flight rest periods shall be increased by 2 hours; or

(ii) the post-flight rest period shall be increased by 4 hours.

(2) When extensions are used for consecutive FDPs, the additional pre- and post-flight rest between the two extended FDPs required under subparagraph 1 shall be provided consecutively.

(3) The use of the extension shall be planned in advance, and shall be limited to a maximum of:

(i) 5 sectors when the WOCL is not encroached; or

(ii) 4 sectors, when the WOCL is encroached by 2 hours or less; or

(iii) 2 sectors, when the WOCL is encroached by more than 2 hours.

(4) Extension of the maximum basic daily FDP without in-flight rest shall not be combined with extensions due to in-flight rest or split duty in the same duty period.

(5) Flight time specification schemes shall specify the limits for extensions of the maximum basic daily FDP in accordance with the certification specifications applicable to the type of operation, taking into account:

(i) the number of sectors flown; and

(ii) WOCL encroachment.

(e) Maximum daily FDP with the use of extensions due to in-flight rest

Flight time specification schemes shall specify the conditions for extensions of the maximum basic daily FDP with in-flight rest in accordance with the certification specifications applicable to the type of operation, taking into account:

(i) the number of sectors flown;

(ii) the minimum in-flight rest allocated to each crew member;

(iii) the type of in-flight rest facilities; and

(iv) the augmentation of the basic flight crew.

(f) Unforeseen circumstances in flight operations — commander's discretion

(1) The conditions to modify the limits on flight duty, duty and rest periods by the commander in the case of unforeseen circumstances in flight operations, which start at or after the reporting time, shall comply with the following:

(i) the maximum daily FDP which results after applying points (b) and (e) of point ORO.FTL.205 or point ORO.FTL.220 may not be increased by more than 2 hours unless the flight crew has been augmented, in which case the maximum flight duty period may be increased by not more than 3 hours;

(ii) if on the final sector within an FDP the allowed increase is exceeded because of unforeseen circumstances after take-off, the flight may continue to the planned destination or alternate aerodrome; and

(iii) the rest period following the FDP may be reduced but can never be less than 10 hours.

(2) In case of unforeseen circumstances which could lead to severe fatigue, the commander shall reduce the actual flight duty period and/or increase the rest period in order to eliminate any detrimental effect on flight safety.

(3) The commander shall consult all crew members on their alertness levels before deciding the modifications under subparagraphs 1 and 2.

(4) The commander shall submit a report to the operator when an FDP is increased or a rest period is reduced at his or her discretion.

(5) Where the increase of an FDP or reduction of a rest period exceeds 1 hour, a copy of the report, to which the operator shall add its comments, shall be sent by the operator to the CAAT not later than 28 days after the event.

(6) The operator shall implement a non-punitive process for the use of the discretion described under this provision and shall describe it in the operations manual.

(g) Unforeseen circumstances in flight operations — delayed reporting

The operator shall establish procedures, in the operations manual, for delayed reporting in the event of unforeseen circumstances, in accordance with the certification specifications applicable to the type of operation.

ORO.FTL.210 - Flight times and duty periods

(a) The total duty periods to which a crew member may be assigned shall not exceed:

(1) 60 duty hours in any 7 consecutive days;

(2) 110 duty hours in any 14 consecutive days; and

(3) 190 duty hours in any 28 consecutive days, spread as evenly as practicable throughout that period.

(b) The total flight time of the sectors on which an individual crew member is assigned as an operating crew member shall not exceed:

(1) 100 hours of flight time in any 28 consecutive days;

and

(2) 1 000 hours of flight time in any 12 consecutive calendar months.

(c) Notwithstanding (b)(2), the total flight time of the sectors on which an individual cabin crew member is assigned as an operating crew member shall not exceed 1 200 hours of flight time in any 12 consecutive calendar months.

(d) Post-flight duty shall count as duty period. The operator shall specify in its operations manual the minimum time period for post-flight duties.

ORO.FTL.215 - Positioning

If an operator positions a crew member, the following shall apply:

(a) positioning after reporting but prior to operating shall be counted as FDP but shall not count as a sector;

(b) all time spent on positioning shall count as duty period.

ORO.FTL.220 - Split duty

The conditions for extending the basic maximum daily FDP due to a break on the ground shall be in accordance with the following:

(a) flight time specification schemes shall specify the following elements for split duty in accordance with the certification specifications applicable to the type of operation:

(1) the minimum duration of a break on the ground; and

(2) the possibility to extend the FDP prescribed under point ORO.FTL.205(b) taking into account the duration of the break on the ground, the facilities provided to the crew member to rest and other relevant factors;

(b) the break on the ground shall count in full as FDP;

(c) split duty shall not follow a reduced rest;

(d) breaks shall be planned in advance.

ORO.FTL.225 - Standby and duties at the airport

If an operator assigns crew members to standby or to any duty at the airport, the following shall apply in accordance with the certification specifications applicable to the type of operation:

(a) standby and any duty at the airport shall be in the roster and the start and end time of standby shall be defined and notified in advance to the crew members concerned to provide them with the opportunity to plan adequate rest;

(b) a crew member is considered on airport standby from reporting at the reporting point until the end of the notified airport standby period;

(c) airport standby shall count in full as duty period for the purpose of points ORO.FTL.210 and ORO.FTL.235;

(d) any duty at the airport shall count in full as duty period and the FDP shall count in full from the airport duty reporting time;

(e) the operator shall provide accommodation to the crew member on airport standby;

(f) flight time specification schemes shall specify the following elements:

(1) the maximum duration of any standby;

(2) the impact of the time spent on standby on the maximum FDP that may be assigned, taking into account facilities provided to the crew member to rest, and other relevant factors such as:

— the need for immediate readiness of the crew member,

— the interference of standby with sleep, and

— sufficient notification to protect a sleep opportunity between the call for duty and the assigned FDP;

(3) the minimum rest period following standby which does not lead to assignment of an FDP;

(4) how time spent on standby other than airport standby shall be counted for the purpose of cumulative duty periods.

ORO.FTL.230 - Reserve

If an operator assigns crew members to reserve, the following requirements shall apply in accordance with the certification specifications applicable to the type of operation:

(a) reserve shall be in the roster;

(b) flight time specification schemes shall specify the following elements:

(1) the maximum duration of any single reserve period;

(2) the number of consecutive reserve days that may be assigned to a crew member.

ORO.FTL.235 - Rest periods

(a) Minimum rest period at home base.

(1) The minimum rest period provided before undertaking an FDP starting at home base shall be at least as long as the preceding duty period, or 12 hours, whichever is greater.

(2) By way of derogation from point (1), the minimum rest provided under point (b) applies if the operator provides suitable accommodation to the crew member at home base.

(b) Minimum rest period away from home base.

The minimum rest period provided before undertaking an FDP starting away from home base shall be at least as long as the preceding duty period, or 10 hours, whichever is greater. This period shall include an 8-hour sleep opportunity in addition to the time for travelling and physiological needs.

(c) Reduced rest

By derogation from points (a) and (b), flight time specification schemes may reduce the minimum rest periods in accordance with the certification specifications applicable to the type of operation and taking into account the following elements:

(1) the minimum reduced rest period;

(2) the increase of the subsequent rest period; and

(3) the reduction of the FDP following the reduced rest.

(d) Recurrent extended recovery rest periods

Flight time specification schemes shall specify recurrent extended recovery rest periods to compensate for cumulative fatigue. The minimum recurrent extended recovery rest period shall be 36 hours, including 2 local nights, and in any case the time between the end of one recurrent extended recovery rest period and the start of the next extended recovery rest period shall not be more than 168 hours. The recurrent extended recovery rest period shall be increased to 2 local days twice every month.

(e) Flight time specification schemes shall specify additional rest periods in accordance with the applicable certification specifications to compensate for:

(1) the effects of time zone differences and extensions of the FDP;

(2) additional cumulative fatigue due to disruptive schedules; and

(3) a change of home base.

ORO.FTL.240 - Nutrition

(a) During the FDP there shall be the opportunity for a meal and drink in order to avoid any detriment to a crew member's performance, especially when the FDP exceeds 6 hours.

(b) An operator shall specify in its operations manual how the crew member's nutrition during FDP is ensured.

ORO.FTL.245 - Records of home base, flight times, duty and rest periods

(a) An operator shall maintain, for a period of 24 months:

(1) individual records for each crew member including:

(i) flight times;

(ii) start, duration and end of each duty period and FDP;

(iii) rest periods and days free of all duties; and

(iv) assigned home base;

(2) reports on extended flight duty periods and reduced rest periods.

(b) Upon request, the operator shall provide copies of individual records of flight times, duty periods and rest periods to:

(1) the crew member concerned; and

(2) to another operator, in relation to a crew member who is or becomes a crew member of the operator concerned.

(c) Records referred to in point CAT.GEN.MPA.100(b)(5) in relation to crew members who undertake duties for more than one operator shall be kept for a period of 24 months.

ORO.FTL.250 - Fatigue management training

(a) The operator shall provide initial and recurrent fatigue management training to crew members, personnel responsible for preparation and maintenance of crew rosters and management personnel concerned.

(b) This training shall follow a training programme established by the operator and described in the operations manual. The training syllabus shall cover the possible causes and effects of fatigue and fatigue countermeasure.

CERTIFICATION SPECIFICATIONS AND GUIDANCE MATERIAL FOR COMMERCIAL AIR TRANSPORT BY AEROPLANE — SCHEDULED AND CHARTER OPERATIONS

CS FTL.1.100 - Applicability

These Certification Specifications are applicable to commercial air transport by aeroplanes for scheduled and charter operations, excluding emergency medical service (EMS), air taxi and single pilot operations.

CS FTL.1.200 - Home base

(a) The home base is a single airport location assigned with a high degree of permanence.

(b) In the case of a change of home base, the first recurrent extended recovery rest period prior to starting duty at the new home base is increased to 72 hours, including 3 local nights. Travelling time between the former home base and the new home base is positioning.

CS FTL.1.205 - Flight duty period (FDP)

(a) Night duties and late finish duties under the provisions of points ORO.FTL.205(b) and (d) comply with the following:

(1) When establishing the maximum FDP for consecutive night duties, the number of sectors is limited to 4 sectors per duty.

(2) The operator applies appropriate fatigue risk management (appropriate FRM) to actively manage the fatiguing effect of night duties and late finish duties in relation to the surrounding duties and rest periods.

(3) When planning and implementing appropriate FRM measures to reduce fatigue during night duties, the operator distinguishes between the following subtypes of night duties and ranks them based on the probability of occurrence of high levels of fatigue at Top of Descent (TOD):

(i) FDPs with a start time between 02:00 and 04:59;

(ii) FDPs with an end time between 02:00 and 05:59 and a start time at 01:59 or earlier; and

(iii) FDPs with an end time at 06:00 or later and a start time at 01:59 or earlier.

(b) Extension of FDP without in-flight rest

The extension of FDP without in-flight rest under the provisions of ORO.FTL.205(d)(5) is limited to the values specified in the table below.

Maximum daily FDP with extension

Starting time of FDP	1–2 sectors (in hours)	3 sectors (in hours)	4 sectors (in hours)	5 sectors (in hours)
0600–0614	Not allowed	Not allowed	Not allowed	Not allowed
0615–0629	13:15	12:45	12:15	11:45
0630–0644	13:30	13:00	12:30	12:00
0645–0659	13:45	13:15	12:45	12:15
0700–1329	14:00	13:30	13:00	12:30
1330–1359	13:45	13:15	12:45	Not allowed
1400–1429	13:30	13:00	12:30	Not allowed
1430–1459	13:15	12:45	12:15	Not allowed
1500–1529	13:00	12:30	12:00	Not allowed
1530–1559	12:45	Not allowed	Not allowed	Not allowed
1600–1629	12:30	Not allowed	Not allowed	Not allowed
1630–1659	12:15	Not allowed	Not allowed	Not allowed
1700–1729	12:00	Not allowed	Not allowed	Not allowed
1730–1759	11:45	Not allowed	Not allowed	Not allowed
1800–1829	11:30	Not allowed	Not allowed	Not allowed
1830–1859	11:15	Not allowed	Not allowed	Not allowed
1900–0359	Not allowed	Not allowed	Not allowed	Not allowed
0400–0414	Not allowed	Not allowed	Not allowed	Not allowed
0415–0429	Not allowed	Not allowed	Not allowed	Not allowed
0430–0444	Not allowed	Not allowed	Not allowed	Not allowed
0445–0459	Not allowed	Not allowed	Not allowed	Not allowed
0500–0514	Not allowed	Not allowed	Not allowed	Not allowed
0515–0529	Not allowed	Not allowed	Not allowed	Not allowed
0530–0544	Not allowed	Not allowed	Not allowed	Not allowed
0545–0559	Not allowed	Not allowed	Not allowed	Not allowed

(c) Extension of FDP due to in-flight rest

In-flight rest facilities in accordance with ORO.FTL.205(e)(iii) fulfil the following minimum standards:

— 'Class 1 rest facility' means a bunk or other surface that allows for a flat or near flat sleeping position. It reclines to at least 80° back angle to the vertical and is located separately from both the flight crew compartment and the passenger cabin in an area that allows the crew member to control light, and provides isolation from noise and disturbance;

— 'Class 2 rest facility' means a seat in an aircraft cabin that reclines at least 45° back angle to the vertical, has at least a pitch of 55 inches (137,5 cm), a seat width of at least 20 inches (50 cm) and provides leg and foot support. It is separated from passengers by at least a curtain to provide darkness and some sound mitigation, and is reasonably free from disturbance by passengers or crew members;

— 'Class 3 rest facility' means a seat in an aircraft cabin or flight crew compartment that reclines at least 40° from the vertical, provides leg and foot support and is separated from passengers by at least a curtain to provide darkness and some sound mitigation, and is not adjacent to any seat occupied by passengers.

(1) The extension of FDP with in-flight rest under the provisions of ORO.FTL.205(e) complies with the following:

(i) the FDP is limited to 3 sectors; and

(ii) the minimum in-flight rest period is a consecutive 90-minute period for each crew member and 2 consecutive hours for the flight crew members at control during landing.

(2) The maximum daily FDP under the provisions of ORO.FTL.205 (e) may be extended due to in-flight rest for flight crew:

(i) with one additional flight crew member:

(A) up to 14 hours with class 3 rest facilities;

(B) up to 15 hours with class 2 rest facilities; or

(C) up to 16 hours with class 1 rest facilities;

(ii) with two additional flight crew members:

(A) up to 15 hours with class 3 rest facilities;

(B) up to 16 hours with class 2 rest facilities; or

(C) up to 17 hours with class 1 rest facilities.

(3) The minimum in-flight rest for each cabin crew member is:

Maximum extended FDP	Minimum in-flight rest (in hours)		
	Class 1	Class 2	Class 3
up to 14:30 hrs	1:30	1:30	1:30
14:31 – 15:00 hrs	1:45	2:00	2:20
15:01 – 15:30 hrs	2:00	2:20	2:40
15:31 – 16:00 hrs	2:15	2:40	3:00
16:01 – 16:30 hrs	2:35	3:00	Not allowed
16:31 – 17:00 hrs	3:00	3:25	Not allowed
17:01 – 17:30 hrs	3:25	Not allowed	Not allowed
17:31 – 18:00 hrs	3:50	Not allowed	Not allowed

(4) The limits specified in (2) may be increased by 1 hour for FDPs that include 1 sector of more than 9 hours of continuous flight time and a maximum of 2 sectors.

(5) All time spent in the rest facility is counted as FDP.

(6) The minimum rest at destination is at least as long as the preceding duty period, or 14 hours, whichever is greater.

(7) A crew member does not start a positioning sector to become part of this operating crew on the same flight.

(d) Unforeseen circumstances in flight operations — delayed reporting

(1) The operator may delay the reporting time in the event of unforeseen circumstances, if procedures for delayed reporting are established in the operations manual. The operator keeps records of delayed reporting. Delayed reporting procedures establish a notification time allowing a crew member to remain in his/her suitable accommodation when the delayed reporting procedure is activated. In such a case, if the crew member is informed of the delayed reporting time, the FDP is calculated as follows:

(i) one notification of a delay leads to the calculation of the maximum FDP according to (iii) or (iv);

(ii) if the reporting time is further amended, the FDP starts counting 1 hour after the second notification or at the original delayed reporting time if this is earlier;

(iii) when the delay is less than 4 hours, the maximum FDP is calculated based on the original reporting time and the FDP starts counting at the delayed reporting time;

(iv) when the delay is 4 hours or more, the maximum FDP is calculated based on the more limiting of the original or the delayed reporting time and the FDP starts counting at the delayed reporting time;

(v) as an exception to (i) and (ii), when the operator informs the crew member of a delay of 10 hours or more in reporting time and the crew member is not further disturbed by the operator, such delay of 10 hours or more counts as a rest period.

CS FTL.1.220 - Split duty

The increase of limits on flight duty, under the provisions of ORO.FTL.220, complies with the following:

(a) The break on the ground within the FDP has a minimum duration of 3 consecutive hours.

(b) The break excludes the time allowed for post and pre-flight duties and travelling. The minimum total time for post and pre-flight duties and travelling is 30 minutes. The operator specifies the actual times in its operations manual.

(c) The maximum FDP specified in ORO.FTL.205(b) may be increased by up to 50 % of the break.

(d) Suitable accommodation is provided either for a break of 6 hours or more or for a break that encroaches the window of circadian low (WOCL).

(e) In all other cases:

(1) accommodation is provided; and

(2) any time of the actual break exceeding 6 hours or any time of the break that encroaches the WOCL does not count for the extension of the FDP.

(f) Split duty cannot be combined with in-flight rest.

CS FTL.1.225 - Standby

The modification of limits on flight duty, duty and rest periods under the provisions of ORO.FTL.225 complies with the following:

(a) Airport standby

(1) If not leading to the assignment of an FDP, airport standby is followed by a rest period as specified in ORO.FTL.235.

(2) If an assigned FDP starts during airport standby, the following applies:

(i) the FDP counts from the start of the FDP. The maximum FDP is reduced by any time spent on standby in excess of 4 hours;

(ii) the maximum combined duration of airport standby and assigned FDP as specified in ORO.FTL.205(b) and (d) is 16 hours.

(b) Standby other than airport standby:

(1) the maximum duration of standby other than airport standby is 16 hours;

(2) The operator's standby procedures are designed to ensure that the combination of standby and FDP do not lead to more than 18 hours awake time;

(3) 25 % of time spent on standby other than airport standby counts as duty time for the purpose of ORO.FTL.210;

(4) standby is followed by a rest period in accordance with ORO.FTL.235;

(5) standby ceases when the crew member reports at the designated reporting point;

(6) if standby ceases within the first 6 hours, the maximum FDP counts from reporting;

(7) if standby ceases after the first 6 hours, the maximum FDP is reduced by the amount of standby time exceeding 6 hours;

(8) if the FDP is extended due to in-flight rest according to CS FTL.1.205(c), or to split duty according to CS FTL.1.220, the 6 hours of paragraph (6) and (7) are extended to 8 hours;

(9) if standby starts between 23:00 and 07:00, the time between 23:00 and 07:00 does not count towards the reduction of the FDP under (6), (7) and (8) until the crew member is contacted by the operator; and

(10) the response time between call and reporting time established by the operator allows the crew member to arrive from his/her place of rest to the designated reporting point within a reasonable time.

CS FTL.1.230 - Reserve

The operator assigns duties to a crew member on reserve under the provisions of ORO.FTL.230 complying with the following:

(a) An assigned FDP counts from the reporting time.

(b) Reserve times do not count as duty period for the purpose of ORO.FTL.210 and ORO.FTL.235.

(c) The operator defines the maximum number of consecutive reserve days within the limits of ORO.FTL.235(d).

(d) To protect an 8-hour sleep opportunity, the operator rosters a period of 8 hours, taking into account fatigue management principles, for each reserve day during which a crew member on reserve is not contacted by the operator.

CS FTL.1.235 - Rest periods

(a) Disruptive schedules

(1) If a transition from a late finish/night duty to an early start is planned at home base, the rest period between the 2 FDPs includes 1 local night.

(2) If a crew member performs 4 or more night duties, early starts or late finishes between 2 extended recovery rest periods as defined in ORO.FTL.235(d), the second extended recovery rest period is extended to 60 hours.

(b) Time zone differences

(1) For the purpose of ORO.FTL.235(e)(1), 'rotation' is a series of duties, including at least one flight duty, and rest period out of home base, starting at home base and ending when returning to home base for a rest period where the operator is no longer responsible for the accommodation of the crew member.

(2) The operator monitors rotations and combinations of rotations in terms of their effect on crew member fatigue, and adapts the rosters as necessary.

(3) Time zone differences are compensated by additional rest, as follows:

(i) At home base, if a rotation involves a 4 hour time difference or more, the minimum rest is as specified in the following table.

Minimum local nights of rest at home base to compensate for time zone differences

Maximum time difference (h) between reference time and local time where a crew member rests during a rotation	**Time elapsed (h) since reporting for the first FDP in a rotation involving at least 4 hour time difference to the reference time**			
	< 48	**48 – 71:59**	**72 – 95:59**	**≥96**
≤ 6	2	2	3	3
> 6 and ≤ 9	2	3	3	4
> 9 and ≤ 12	2	3	4	5

(ii) Away from home base, if an FDP involves a 4-hour time difference or more, the minimum rest following that FDP is at least as long as the preceding duty period, or 14 hours, whichever is greater. By way of derogation from point (b)(3)(i) and only once between 2 recurrent extended recovery rest periods as specified in ORO.FTL.235(d), the minimum rest provided under this point (b)(3)(ii) may also apply to home base if the operator provides suitable accommodation to the crew member.

(4) In case of an Eastward-Westward or Westward-Eastward transition, at least 3 local nights of rest at home base are provided between alternating rotations.

(5) The monitoring of combinations of rotations is conducted under the operator's management system provisions.

(c) Reduced rest

(1) The minimum reduced rest periods under reduced rest arrangements are 12 hours at home base and 10 hours out of base.

(2) Reduced rest is used under fatigue risk management.

(3) The rest period following the reduced rest is extended by the difference between the minimum rest period specified in ORO.FTL.235(a) or (b) and the reduced rest.

(4) The FDP following the reduced rest is reduced by the difference between the minimum rest period specified in ORO.FTL.235(a) or (b) as applicable and the reduced rest.

(5) There is a maximum of 2 reduced rest periods between 2 recurrent extended recovery rest periods specified in accordance with ORO.FTL.235(d).

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SUBPART FTLS: FLIGHT AND DUTY TIME LIMITATION AND REST REQUIREMENTS

ORO.FTLS.100 - Scope

This Subpart establishes the requirements to be met by the following operators and their crew members with regard to flight and duty time limitations and rest requirements for crew members.

(a) The Commercial Air Transport (CAT) - Helicopter

(b) The Commercial Air Transport (CAT) - Air taxi

(c) The Commercial Air Transport (CAT) - Emergency Medical Services (EMS)

ORO.FTLS.105 - Definitions

For the purpose of this Subpart, the following definitions shall be applied:

(1) **Accommodation** means for the purpose of standby and split duty, a quiet and comfortable place not open to the public with the ability to control light and temperature, equipped with adequate furniture that provides a crew member with the possibility to sleep, with enough capacity to accommodate all crew members present at the same time and with access to food and drink.

(2) **Suitable accommodation** means, for the purpose of standby, split duty and rest, a room located in a quiet environment and equipped with a bed, which is sufficiently ventilated, has a device for regulating temperature and light intensity, and access to food and drink.

(3) **Augmented flight crew** means a flight crew which comprises more than the minimum number required to operate the aircraft, allowing each flight crew member to leave the assigned post, for the purpose of in-flight rest, and to be replaced by another appropriately qualified flight crew member;

(4) **Break** means a period of time within an flight duty period, shorter than a rest period, counting as duty and during which a crew member is free of all tasks;

(5) **Crew member** means a person assigned by an operator to perform duties on board an aircraft, including, Flight crew member and Cabin crew member.

(6) **Duty** means any task that a crew member performs for the operator, including flight duty, administrative work, giving or receiving training and checking, positioning, and some elements of standby.

(7) **Duty period** means a period which starts when a crew member is required by an operator to report for or to commence a duty and ends when that person is free of all duties, including postflight duty;

(8) **Emergency Medical Service/Air ambulance** means a flight for the purpose of which is to facilitate emergency medical assistance, where immediate and rapid transportation is essential, by carrying:

(a) medical personnel,

(b) or medical supplies (equipment, blood, organs, medications),

(c) or sick or injured individuals and other directly affected persons.

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

(10) **Flight duty period** means a period that commences when a crew member is required to report for duty that includes a flight or a series of flights, start counting at reporting time and stop when the aircraft finally comes to rest at the end of the last flight on which he/she is a crewmember and all engines or propellers are shut down or rotor blades are stopped.

(11) **Flight time/ Block Time** means

Aeroplane: The total time between an aircraft first moving from its parking place for the purpose of taking off until it finally comes to rest at the end of the flight and all engines or propellers are shut down.

Helicopter: The total time from the moment a helicopter's rotor blades start turning until the moment the helicopter finally comes to rest at the end of the flight, and the rotor blades are stopped.

(12) **Home base** means the location, assigned by the operator to the crew member, from where the crew member normally starts and ends a duty period or a series of duty periods and where, under normal circumstances, the operator is not responsible for the accommodation of the crew member concerned.

(13) **Local day** means a 24-hour period commencing at 00:00 local time.

(14) **Local night** means a period of 8 hours falling between 22:00 and 08:00 local time.

(15) **Night** means a period between the end of evening civil twilight and the beginning of morning civil twilight or such other period between sunset and sunrise as may be prescribed by the appropriate authority.

(16) **Positioning** means the transferring of a non-operating crew member from one place to another, at the behest of the operator, excluding:

the time of travel from a private place of rest to the designated reporting place at home base and vice versa, and the time for local transfer from a place of rest to the commencement of duty and vice versa.

(17) **Reporting time** means the local time where crew member is required by the operator to report for duty.

(18) **Reserve** means a period of time during which a crew member is required by the operator to be available to receive an assignment for an FDP, positioning or other duty notified at least 10 hours in advance.

(19) **Rest period** means a continuous, uninterrupted and defined period of time, following duty or prior to duty, during which a crew member is free of all duties, standby and reserve.

(20) **Roster** means a list provided by the operator of the times when a crew member is required to undertake duties. The roster shall include, but not limited to the elements of Duty Period and Day Off.

(21) **Rotation** is a duty or a series of duties, including at least one flight duty, and rest periods out of home base, starting at home base and ending when returning to home base for a rest period where the operator is no longer responsible for the accommodation of the crew member.

(22) **Single day free of duty** means a time free of all duties and standby consisting of one day and two local nights, which is notified in advance. A rest period may be included as part of the single day free of duty.

(23) **Sectors** means the segment of an FDP between an aircraft first moving for the purpose of taking off until it comes to rest after landing on the designated parking position.

(24) **Standby duty** means a defined period of time during which a crew member is required by the operator to be available to receive an assignment for a specific duty without an intervening rest period.

(25) **Airport standby** means a standby performed at the airport.

(26) **Other standby** means a standby either at home or in a suitable accommodation.

(27) **Window of circadian low ('WOCL')** means the period between 02:00 and 05:59 local time where crew member is required by the operator to report for duty.

(28) **Unforeseen operational circumstance** an unexpected condition that could not reasonably have been predicted and accommodated, such as bad weather or equipment malfunction, which may result in necessary on-the-day operational adjustments.

ORO.FTLS.110 - Operator responsibilities

An operator shall:

(a) Prepare and publishe duty roster sufficiently in advance to provide crew members the opportunity to plan adequate rest. Consideration shall be given to the cumulative effects of undertaking long duty hours interspersed with minimum rest, and of avoiding rosters that result in the serious disruption of an established pattern of working and sleeping.

(b) Establish the roster which includes, but not limited to the elements of Duty period and Day free of duty.

(c) Ensure that flight duty periods are planned in a way that enables crew members to remain sufficiently free from fatigue so that they can operate to a satisfactory level of safety and manage their workload under all circumstances.

(d) Plan the flight within the allowable flight duty period taking into account the time necessary for the pre-flight duties, the flight and turnaround times, and the nature of the operation.

(e) Define the duration necessary for the post-flight duty considering the time required for aircraft-related tasks, completion of post-flight documentation, and administrative responsibilities, tailored to the specific nature of the operation.

(f) Provide rest periods of sufficient time to enable crew members to overcome the effects of previous duties and to be rested by the start of the following flight duty period and provide accommodation or suitable accommodation as appropriate to the operations.

(g) Establish a fatigue reporting process that complies with applicable regulatory requirements. This reporting process shall enable the operational personnel to raise legitimate concerns regarding fatigue without fear of retribution or punishment from both within and outside the organization.

(h) Establish the procedures that ensure crew arrangements and day-to-day operational practices are compliant with Individual Flight Time Specification Schemes (IFTSS).

ORO.FTLS.115 - Crew member responsibilities

A crew member shall:

(a) Not operate the flight when he or she knows that he or she is fatigued or feels unfit to the extent that the safety of the flight may be adversely affected, or in a state which is not ready to make a flight for reasons of health, body and mind.

(b) Make optimum use of the facilities and opportunities that are provided for rest and for the consumption of meals, and they should plan and use their rest periods properly to ensure that they are fully rested.

(c) Check their records under ORO.FTLS.245(a)(1) before performing the duty, and inform the operator if the information does not meet the requirements.

(d) Comply with all flight and duty time limitations and rest requirements applicable to their activities.

ORO.FTLS.120 - Fatigue Risk Management (FRM)

(a) When FRM is required by ORO.FTL or an applicable certification specification, the operator shall establish, implement and maintain a FRM as an integral part of its management system. The FRM shall ensure compliance with the Air Navigation Act B.E.2497, Kingdom of Thailand Civil Aviation Regulations and other relevant national provision. The FRM shall be described in the operations manual.

(b) The FRM established, implemented and maintained shall provide for continuous improvement to the overall performance of the FRM and shall include:

(1) a description of the philosophy and principles of the operator with regard to FRM, referred to as the FRM policy;

(2) documentation of the FRM processes, including a process for making personnel aware of their responsibilities and the procedure for amending this documentation;

(3) scientific principles and knowledge;

(4) a hazard identification and risk assessment process that allows managing the operational risk(s) of the operator arising from crew member fatigue on a continuous basis;

(5) a risk mitigation process that provides for remedial actions to be implemented promptly, which are necessary to effectively mitigate the operator's risk(s) arising from crew member fatigue and for continuous monitoring and regular assessment of the mitigation of fatigue risks achieved by such actions;

(6) FRM safety assurance processes;

(7) FRM promotion processes.

(c) The FRM shall correspond to the flight time specification scheme, the size of the operator and the nature and complexity of its activities, taking into account the hazards and associated risks inherent in those activities and the applicable flight time specification scheme.

(d) The operator shall take mitigating actions when the FRM safety assurance process shows that the required safety performance is not maintained. Further guidance on FRM processes, appropriate fatigue management, the underlying scientific principles and operational knowledge may be found in ICAO Doc 9966 (Manual for the Oversight of Fatigue Management Approaches).

ORO.FTLS.125 - Flight time specification schemes

(a) Operators shall establish, implement and maintain flight time specification schemes that are appropriate for the type(s) of operation performed and that comply with the air operations requirements of the Air Navigation Act B.E 2497, this Subpart and Kingdom of Thailand Civil Aviation Regulations and other applicable legislation.

(b) Before being implemented, flight time specification schemes, including any related FRM where required, shall be approved by the CAAT.

(c) To demonstrate compliance with the Air Navigation Act B.E 2497, TCAR OPS and this Subpart, the operator shall apply the applicable certification specifications requirements. Alternatively, if the operator wants to deviate from those certification specifications, the operator shall provide the CAAT with a full description of the intended deviation prior to implementing it. The description shall include any revisions to manuals or procedures that may be relevant, as well as an assessment demonstrating that the requirements are met and proving that level of safety equivalent to, or better than, the prescriptive fatigue management requirements.

(d) In accordance with the CAAT internal oversight, certification and enforcement procedures, within 2 years of the implementation of a deviation, the operator shall collect data concerning the granted deviation or derogation and analyse that data using scientific principles with a view to assessing the effects of the deviation or derogation on aircrew fatigue. Such analysis shall be provided in the form of a report to the CAAT.

ORO.FTLS.200 - Home base

An operator shall assign a home base to each crew member, from where the crew member will normally start and end a duty period or a series of duty periods. The home base shall be assigned with a degree of permanence.

ORO.FTLS.205 - Flight duty period (FDP)

(a) The operator shall define reporting time appropriate to each individual operation, take into account the time required to complete safety-related ground duties.

(b) The basic maximum daily FDP

(1) The maximum daily FDP for ORO.FTLS.100(a) without the use of extensions for crew members shall be in accordance with the following table:

Table A

Maximum Flight Duty Period and Flight Time (Hours)				
Local time of Departure	Single Pilot		Multi Pilot	
	Maximum Flight Duty Period	Maximum Flight Time	Maximum Flight Duty Period	Maximum Flight Time
06:00 - 06:59	9	6	10	7
07:00 - 07:59	10	7	11	8
08:00 - 13:59	10	7	12	8
14:00 - 21:59	9	6	10	7
22:00 - 05:59	8	5	9	6

(i) Helicopter emergency medical service (HEMS) operations shall apply ORO.FTLS.205 (d).

(2) The maximum daily FDP for ORO.FTLS.100(b) and (c) without the use of extensions for crew members shall be in accordance with the following table:

Table B

Number of Sector	1	2	3	4	5	6	7 or more
Maximum Flight Duty Period (hours)	13	13	12:30	12	11:30	11	11

(i) When the FDP starts in the WOCL, the maximum FDP stated in Table B shall be reduced by 100% of its encroachment up to a maximum of 2 hours.

(ii) When the FDP ends in or entirely in the WOCL, the maximum FDP stated in Table B shall be reduced by 50% of its encroachment.

(c) FDP for CAT - single pilot operations for ORO.FTLS.100(b) and (c)

(1) The provisions of ORO.FTLS.205(b)(2) shall be applied.

(2) Additionally, in IFR or night operations, the sum of daily flight times shall not exceed 6 hours, and the maximum flight time of each sector is as follows:

(i) 4 hours if the aircraft is equipped with a fully functioning and serviceable autopilot;

(ii) 2 hours in other cases.

(d) FDP for CAT - Emergency Medical Service operations

(1) The provisions of ORO.FTLS.205(b)(2) shall be applied for multi pilot operations.

(2) The provisions of ORO.FTLS.205(c) shall be applied for single pilot operations.

(3) The alternative provisions regarding maximum daily FDP for CAT-EMS are:

Table C

Number of Sector	1	2	3	4	5	6	7 or more
Maximum Flight Duty Period (hours)	18	18	18	17:30	17	16:30	16

(i) When the FDP starts in the WOCL, the maximum FDP stated in Table C shall be reduced by 100% of its encroachment up to a maximum of 2 hours.

(ii) When the FDP ends in or entirely in the WOCL, the maximum FDP stated in Table C shall be reduced by 50% of its encroachment.

(iii) The flight duty period greater than 14 hours shall be followed by rest period not less than 24 hours, including at least one local night.

(4) The operator is allowed to use the alternative provisions regarding the maximum daily FDP provided in ORO.FTLS.205(d)(3), if comply with the following conditions:

(i) The aircraft shall be operated with a two-man crew, and
(ii) The operator implements a fatigue risk management (FRM).

(e) FDP extension without in-flight rest

The maximum daily flight duty period prescribed in ORO.FTLS.205(b)(2) may be extended up to 1 hour under the following conditions;

(1) The use of the extension shall be planned in advance, and shall be limited to a maximum of:

(i) 5 sectors when the WOCL is not encroached; or

(ii) 4 sectors, when the WOCL is encroached by 2 hours or less; or

(iii) 2 sectors, when the WOCL is encroached by more than 2 hours.

(2) The minimum pre-flight and post-flight rest periods shall be increased by 2 hours, or the post-flight rest period shall be increased by 4 hours.

(3) When extensions are used for consecutive FDPs, the additional pre- and post-flight rest between the two extended FDPs required under ORO.FTLS.205(e)(2) shall be provided consecutively.

(4) The maximum number of extensions is 2 in any 7 consecutive days.

(5) When the extended FDP starts during the period of 22:00 - 04:59, the total FDP is limited to 11:45 hours.

(6) The extension of the maximum basic daily FDP without in-flight rest shall not be combined with the FDP extensions due to in-flight rest or the split duty in the same duty period.

(f) FDP extension due to in-flight rest

The operator shall provide the crew members with rest facilities that away from cockpit and passengers, to enable each flight crew member to leave the assigned post for the purpose of in-flight rest. He or she shall be replaced by another appropriately qualified crew member. The maximum FDP is increased to:

Table D

Rest facility	Maximum flight duty period (hours)				
	Sectors				
	1	2	3	4	5
Reclinable seat	16	16	15.30	15	Not allowed
Bunk	18	18	Not allowed	Not allowed	Not allowed

(1) For the flight duty period of more than 18 hours, FRM shall be applied.

(2) The minimum in-flight rest period is a consecutive 90 minutes period for each crew member.

(g) FDP extension by PIC discretion due to unforeseen operational circumstance

(1) The conditions to modify the limits on flight duty, duty and rest periods only at the discretion of the Pilot in Command (PIC) in the case of Unforeseen operational circumstances, which start at or after the reporting time, shall comply with the following:

(i) The maximum daily FDP may not be increased by more than 2 hours unless the flight crew has been augmented, in which case the maximum FDP may be increased by not more than 3 hours.

(ii) If on the final sector within an FDP the allowed increase in ORO.FTLS.205(g)(1)(i) is exceeded because of unforeseen circumstances after take-off, the flight may continue to the planned destination or alternate aerodrome; and

(iii) The rest period following the FDP may be reduced but can never be less than 10 hours.

(2) In case of unforeseen circumstances which could lead to severe fatigue, the PIC shall reduce the actual Flight Duty Period and/or increase the Rest Period to eliminate any detrimental effect on flight safety.

(3) The PIC shall consult all crew members on their alertness levels before deciding the modifications under ORO.FTLS.205(g)(1) and (2).

(4) The PIC shall submit a report to the operator when an FDP is increased or a rest period is reduced at his or her discretion.

(5) The operator shall submit the PIC's discretion report of the Flight Duty Period extension or Rest Period reduction of crew members due to Unforeseen operational circumstances to the CAAT within 28 days after the PIC's discretion.

(6) The operator shall implement a non-punitive process for the use of the discretion described under this provision and shall describe it in the operations manual.

ORO.FTLS.210 – Flight times and duty periods

(a) The total flight time to which an individual crew member may be assigned shall not exceed:

(1) 34 hours in any 7 consecutive days,

(2) 110 hours in any 28 consecutive days,

(3) 1000 hours in any 365 consecutive days

(b) The total duty periods to which an individual crew member may be assigned shall not exceed:

(1) 60 hours in any 7 consecutive days,

(2) 110 hours in any 14 consecutive days,

(3) 190 hours in any 28 consecutive days

(c) Post-flight duty shall be counted as duty period. The operator shall specify the minimum time period for post-flight duties in the operations manual.

ORO.FTLS.215 - Positioning

If an operator positions a crew member, the following requirements shall be applied:

(a) Positioning after reporting but prior to operating shall be counted as FDP but shall not count as a sector;

(b) All time spent on positioning shall count as duty period.

(c) The rest period under ORO.FTLS.235 start counting after the on-block time and end at the commencement of the next duty.

(d) The positioning after a flight duty period shall not be counted as a rest period.

ORO.FTLS.220 – Split duty

Flight duty period including a break may be extended under the following conditions;

(a) Break shall be planned in advance.

(b) The break on the ground shall count in full as FDP;

(c) The break on ground within the FDP shall be a minimum duration of 3 consecutive hours.

(d) The break excludes the time for post-flight duties, pre-flight duties and traveling time which will not less than 30 minutes. The operator shall specify the time applicable to the type of operation in the operations manual

(e) The maximum FDP may be increased by 50% of the break duration.

(f) The split duty shall not follow a reduced rest.

(g) The split duty cannot be combined with in-flight rest.

(h) The suitable accommodation shall be provided either for a break of 6 hours or more or for a break that encroaches the window of circadian low (WOCL).

(i) In all other cases, accommodation shall be provided.

(j) If the break is taken in the aircraft on ground, the operator shall ensure that

(1) minimum conditions in terms of noise, temperature, light and ventilation are specified in the operations manual,

(2) a crew member has an ability to control conditions specified in ORO.FTLS.220(j)(1) in the aircraft,

(3) the surrounding aircraft operations do not interfere the rest of the crew member during break,

(4) no passenger on board,

(5) an opportunity to consume meal is arranged,

(6) Fatigue Risk Management (FRM) shall be applied.

ORO.FTLS.225 – Standby and duties at the airport

(a) Airport standby and duties at the airport

(1) Standby and any duty at the airport shall be in the roster and the start and end time of standby shall be defined and notified in advance to the crew members concerned to provide them with the opportunity to plan adequate rest.

(2) A crew member is considered on airport standby from reporting at the reporting point until the end of the notified airport standby period;

(3) Airport standby shall be counted in full as duty period for the purpose of ORO.FTLS.210(b) and ORO.FTLS.235.

(4) Any duty at the airport shall count in full as duty period and the FDP shall count in full from the airport duty reporting time.

(5) The operator shall provide accommodation to the crew member on airport standby.

(6) The maximum standby at the airport is 12 hours.

(7) If not leading to the assignment of an FDP, airport standby is followed by a rest period as specified in ORO.FTLS.235.

(8) If an assigned FDP starts during airport standby, the following applies:

(ii) the FDP counts from the start of the FDP. The maximum FDP is reduced by any time spent on standby in excess of 4 hours;

(iii) the maximum combined duration of airport standby and assigned FDP is 16 hours.

(b) Standby other than airport standby

(1) The maximum duration of standby other than airport standby is 16 hours;

(2) The operator's standby procedures are designed to ensure that the combination of standby and FDP do not lead to more than 18 hours awake time;

(3) 25 % of time spent on standby other than airport standby counts as duty time for the purpose of ORO.FTLS.210(b);

(4) Standby is followed by a rest period in accordance with ORO.FTLS.235;

(5) Standby ceases when the crew member reports at the designated reporting point;

(6) If standby ceases within the first 6 hours, the maximum FDP counts from reporting;

(7) If standby ceases after the first 6 hours, the maximum FDP is reduced by the amount of standby time exceeding 6 hours;

(8) If the FDP is extended due to in-flight rest or to split duty, the 6 hours of ORO.FTLS.225(b) (6) and (7)are extended to 8 hours;

(9) If standby starts between 23:00 and 07:00, the time between 23:00 and 07:00 does not count towards the reduction of the FDP under ORO.FTLS.225(b) (6), (7) and (8) until the crew member is contacted by the operator; and

(10) The response time between the call and the reporting time established by the operator allows the crew member to arrive from his/her place of rest to the designated reporting point within a reasonable time.

ORO.FTLS.230 – Reserve

If an operator assigns crew members to reserve, the following requirements shall be applied:

(a) Reserve shall be in the roster.

(b) The maximum duration of any single reserve period shall be specified.

(c) The maximum number of consecutive reserve days shall be specified within the limits of ORO.FTL.235(d).

(d) An assigned FDP counts from the reporting time.

(e) Reserve times do not count as duty period for the purpose of ORO.FTL.210 and ORO.FTL.235.

(f) Duty shall be notified in advance at least 10 hours between the notification of an assignment for any duty and reporting for duty to protect an 8-hour sleep opportunity, the operator rosters a period of 8 hours, taking into account fatigue management principles, for each reserve day during which a crew member on reserve is not contacted by the operator.

ORO.FTLS.235 – Rest periods

(a) Minimum rest at home base

(1) The minimum rest period provided before undertaking an FDP starting at home base shall be at least as long as the preceding duty period, or 12 hours, whichever is greater.

(2) If a rotation involves at least a sector of a 4-hour time difference or more, the minimum rest after rotation shall be at least 36 hours, including two local nights.

(b) Minimum rest away from home base

(1) The minimum rest period provided before undertaking an FDP starting away from home base shall be at least as long as the preceding duty period, or 10 hours, whichever is greater. This period shall include an 8-hour sleep opportunity in addition to the time for travelling and physiological needs.

(2) If an FDP involves a 4-hour time difference or more, the minimum rest following that FDP is at least as long as the preceding duty period, or 14 hours, whichever is greater.

(c) Reduced rest

(1) Reduced rest is used under fatigue risk management.

(2) The minimum reduced rest periods under reduced rest arrangements are 12 hours at home base and 10 hours out of base.

(3) The rest period following the reduced rest is extended by the difference between the minimum rest period specified in ORO.FTL.235(a)(1) or (b)(1) and the reduced rest.

(4) The FDP following the reduced rest is reduced by the difference between the minimum rest period specified in ORO.FTL.235(a)(1) or (b)(1) as applicable and the reduced rest.

(5) There is a maximum of 2 reduced rest periods between 2 recurrent extended recovery rest periods specified in accordance with ORO.FTL.235(d).

(d) Recovery rest

The recovery rest period shall be planned and notified to crew members sufficiently in advance.

The minimum recovery rest period shall be 36 hours, including 2 local nights, and in any case the time between the end of one recovery rest period and the start of the next extended recovery rest period shall not be more than 168 hours.

ORO.FTLS.240 – Nutrition

An operator shall arrange the opportunities to consume a meal for crew member when the flight duty period exceeds 6 hours to avoid any detriment to a crew member's performance.

ORO.FTLS.245 – Records

(a) The operator shall maintain records of the following information for a period of 24 months and ensure that this information is accessible by individual crew members;

(1) Individual records for each crew member including:

(i) Flight Time;

(ii) the start, duration and end of each Duty period and Flight Duty Period;

(iii) Rest Periods and Day free of all duties; and

(iv) Assigned home base

(2) reports on extended flight duty periods and reduced rest periods.

ORO.FTLS.250 – Fatigue management training

(a) The operator shall provide initial and recurrent fatigue management training to crew members, personnel responsible for preparation and maintenance of crew rosters and management personnel concerned.

(b) The training syllabus shall cover the following:

(1) applicable regulatory requirements for flight, duty and rest,

(2) the basics of fatigue including sleep fundamentals and the effects of disturbing the circadian rhythms,

(3) the causes of fatigue, including medical conditions that may lead to fatigue,

(4) the effect of fatigue on performance,

(5) fatigue countermeasures,

(6) the influence of lifestyle, including nutrition, exercise, and family life, on fatigue,

(7) familiarity with sleep disorders and their possible treatments,

(8) where applicable, the effects of long range operations and heavy short range schedules on individuals,

(9) the effect of operating through and within multiple time zones,

(10) the crew member responsibility for ensuring adequate rest and fitness for flight duty,

(11) the optimum use of sleep opportunities, in particular before an FDP with in-flight rest.

Appendix I to TCAR OPS Part ORO

DECLARATION in accordance with TCAR OPS
Operator
Name: Place in which the operator has its principal place of business or, if the operator has no principal place of business, place in which the operator is established or residing and place from which the operations are directed: Name and contact details of the accountable manager:
Aircraft operation
Starting date of operation and applicability date of the change:
Information on aircraft, operation and continuing airworthiness management organisation(1):
Type(s) of aircraft, registration(s) and main base:

Aircraft MSN(2)	Aircraft type	Aircraft registration(3)	Main base	Type(s) of operation(4)	Organisation in charge of continuing airworthiness management(5)

The operator shall obtain a prior approval(6) or specific approval(7) for certain operations before conducting such operations.
Where applicable, details of approvals held. Attach the list of specific approvals, including: - specific approvals granted by a third country, if applicable; - name of operations conducted with operational credits (e.g. EFVS 200, SA CAT I, etc.).
Where applicable, details of specialised operations authorisation held (attach authorisation(s), if applicable).
Where applicable, list of alternative means of compliance (AltMoC) with references to the associated AMC they replace (attach AltMoC).

Statements
☐ The operator complies, and will continue to comply, with the essential requirements set out in Air Navigation Act and in the cover regulation to TCAR OPS. ☐ The management system documentation, including the operations manual, complies with the requirements of TCAR OPS part ORO, TCAR OPS part SPA, TCAR OPS part NCC, TCAR OPS part SPO and all flights will be made in accordance with the provisions of the operations manual as required by point ORO.GEN.110(b) of TCAR OPS. ☐ operated aircraft hold a valid certificate of airworthiness in accordance with applicable airworthiness requirements or meet the specific airworthiness requirements applicable to aircraft registered in a third country and authorise to operate in the Kingdom of Thailand. ☐ All operated aircraft shall hold: - a valid certificate of airworthiness in accordance with the applicable airworthiness requirements or, for aircraft registered in a third country, in accordance with ICAO Annex 8; and - when used for SPO activities, a valid lease agreement as per ORO.SPO.100. ☐ All flight crew members hold a licence in accordance with TCAR PEL Part FCL as required by point ORO.FC.100(c) of Part ORO, and cabin crew members, where applicable, be trained in accordance with Subpart CC of Part ORO. ☐ (If applicable) The operator shall implement and demonstrate conformity to a recognised industry standard. Reference of the standard: Certification body: Date of the last conformity audit: ☐ The operator will notify to the CAAT any change in circumstances affecting its compliance with the essential requirements set out in Air Navigation Act and in the cover regulation to TCAR OPS and with the requirements of TCAR OPS as declared to the CAAT through this declaration as required by TCAR OPS point ORO.GEN.120(a) ☐ The operator confirms that the information disclosed in this declaration is correct. ☐ The operator will grant access to the facilities, documents, records and aircrafts to the representative of the CAAT for oversight purposes.
Date, name and signature of the accountable manager
(1) If there is not enough space to list the information in the space of the declaration, the information shall be listed in a separate annex. The annex shall be dated and signed by the accountable manager. (2) Manufacturer serial number. (3) If the aircraft is also registered with an AOC holder, specify the AOC number of the AOC holder. (4) “Type(s) of operation” refers to the type of operations conducted with this aircraft, e.g. non-commercial operations or specialised operations such as aerial photography flights, aerial

advertising flights, news media flights, television and movie flights, parachute operations, skydiving, maintenance check flights.

(5) Information about the organisation responsible for the continuing airworthiness management includes the name of the organization its address, and the approval reference.

(6) (a) operations with any defective instrument or piece of equipment or item or function, under a minimum equipment list (MEL) (points ORO.MLR.105 (b), (f), and (j), NCC.IDE.A.105, NCC.IDE.H.105, SPO.IDE.A.105, and SPO.IDE.H.105).

(b) Operations requiring prior authorisation or approval, including all of the following:

— for specialised operations, wet lease-in and dry lease-in of aircraft registered in a third country (point ORO.SPO.100 (c));

— high-risk commercial specialised operations (point ORO.SPO.110);

— non-commercial operations with aircraft with an MOPSC of more than 19, which are performed without an operating cabin crew member (point ORO.CC.100 (d));

— use of IFR operating minima that are lower than those published by the State (points NCC.OP.110 and SPO.OP.110);

— refuelling with engine(s) and/or rotors turning (point NCC.OP.157);

— specialised operations (SPO) without oxygen above 10 000 ft (point SPO.OP.195).

(7) Operations in accordance with TCAR OPS Part SPA, including Subparts B 'Performance-based navigation (PBN) operations', C 'Operations with specified minimum navigation performance (MNPS)', D 'Operations in airspace with reduced vertical separation minima (RVSM)', E 'Low-visibility operations (LVOs) and operations with operational credits', G 'Transport of dangerous goods' and K 'Helicopter offshore operations'.

สำนักงานการบินพลเรือนแห่งประเทศไทย
The Civil Aviation Authority of Thailand

Thailand Civil Aviation Regulation – Air Operations
Part Commercial Air Transport
(TCAR OPS Part - CAT)

TCAR OPS Part - CAT

Issue: 02

Revision: 00

Date 20 December 2024

Approved By

Suttipong Kongpool

Director General

The Civil Aviation Authority of Thailand

THAILAND CIVIL AVIATION REGULATION (TCAR)

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RECORD OF REVISIONS

Issue No.	Revision No.	Date (DD/MMM/YYYY)	Subject	Insert By (Department/ Division)
01	00	8 Dec 2023	Initial issue including (EU) No 2019/1387, (EU) No2018/1384, (EU) No 2019/1387, (EU) No 2020/2036, (EU) No 2021/1296, (EU) No 2021/2237, (EU) 2022/2203 and (EU) 2023/217, Notably, (EU) 2023/203 was not included.	OPS
02	00	20 Dec 2024	New Issue	OPS

REVISION HIGHLIGHTS

Area of Change	Change Detail(s)
New Issue	New Issue

LIST OF EFFECTIVE PAGES

Change and amendment bar is placed against each paragraph affected.

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INTRODUCTION AND APPLICABILITY

In this publication the word 'must' or 'shall' is used to indicate where the Director General requires the Organisation, owner or operator to respond to and comply with, or adhere closely to, the defined requirement

If the Organisation's/owner's/operator's response is deemed to be inadequate by the Director General, a specific requirement or restriction may be applied as a condition of the appropriate instrument to be issued under

TCAR OPS is based on the latest consolidated version of Commission Regulation (EU) No 965/2012 of 5 October 2012 laying down technical requirements and administrative procedures related to air operations, as amended up to (EU) No 2023/217. Notably, (EU) 2023/203 was not included as part of the initial issue.

TCAR OPS Part CAT is a part of the overall TCAR OPS Regulation set.

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TABLE OF CONTENT

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SUBPART A: GENERAL REQUIREMENTS

CAT.GEN.100 The competent authority

For the purpose of TCAR OPS Part CAT, the CAAT is the competent authority exercising oversight, over operators subject to an authorisation or approval obligation and having their principal place of business in the Kingdom of Thailand.

SECTION 1 Motor-powered aircraft

CAT.GEN.MPA.100 Crew responsibilities

(a) The crew member shall be responsible for the proper execution of his or her duties that are:

(1) related to the safety of the aircraft and its occupants; and

(2) specified in the instructions and procedures in the operations manual.

(b) The crew member shall:

(1) report to the commander any fault, failure, malfunction or defect which the crew member believes may affect the airworthiness or safe operation of the aircraft including emergency systems, if not already reported by another crew member;

(2) report to the commander any incident that endangered, or could have endangered, the safety of the operation, if not already reported by another crew member;

(3) comply with the relevant requirements of the operator's occurrence reporting schemes;

(4) comply with all flight and duty time limitations (FTL) and rest requirements applicable to their activities;

(5) when undertaking duties for more than one operator:

(i) maintain his or her individual records regarding flight and duty times and rest periods as referred to in the applicable FTL requirements;

(ii) provide each operator with the data needed to schedule activities in accordance with the applicable FTL requirements; and

(iii) provide each operator with the data needed regarding operations on more than one type or variant.

(c) The crew member shall not perform duties on an aircraft:

(1) when under the influence of psychoactive substances or when unfit due to injury, fatigue, medication, sickness or other similar causes;

(2) until a reasonable time period has elapsed after deep water diving or following blood donation;

(3) if applicable medical requirements are not fulfilled;

(4) if he or she is in any doubt of being able to accomplish his or her assigned duties; or

(5) if he or she knows or suspects that he/she is suffering from fatigue as referred to in the Subpart FTL of TCAR OPS Part ORO or Notification of the Civil Aviation Authority of Thailand on Flight Time and Flight Duty Period Limitation as they may be applicable or feels otherwise unfit, to the extent that the flight may be endangered.

CAT.GEN.MPA.105 Responsibilities of the commander

(a) The commander, in addition to complying with CAT.GEN.MPA.100, shall:

(1) be responsible for the safety of all crew members, passengers and cargo on board, as soon as the commander arrives on board the aircraft, until the commander leaves the aircraft at the end of the flight;

(2) be responsible for the operation and safety of the aircraft:

(i) for aeroplanes, from the moment the aeroplane is first ready to move for the purpose of taxiing prior to take-off, until the moment it finally comes to rest at

the end of the flight and the engine(s) used as primary propulsion unit(s) is(are) shut down;

(ii) for helicopters, when the rotors are turning;

(3) have authority to give all commands and take any appropriate actions for the purpose of securing the safety of the aircraft and of persons and/or property carried there in accordance with the air operations requirements of the Air Navigation Act B.E 2497 and Kingdom of Thailand Civil Aviation Regulations.

(4) have authority to disembark any person, or any part of the cargo, that may represent a potential hazard to the safety of the aircraft or its occupants;

(5) not allow a person to be carried in the aircraft who appears to be under the influence of alcohol or drugs to the extent that the safety of the aircraft or its occupants is likely to be endangered;

(6) have the right to refuse transportation of inadmissible passengers, deportees or persons in custody if their carriage increases the risk to the safety of the aircraft or its occupants;

(7) ensure that all passengers are briefed on the location of emergency exits and the location and use of relevant safety and emergency equipment;

(8) ensure that all operational procedures and checklists are complied with in accordance with the operations manual;

(9) not permit any crew member to perform any activity during critical phases of flight, except duties required for the safe operation of the aircraft;

(10) ensure that:

(i) flight recorders are not disabled or switched off during flight;

(ii) in the event of an occurrence other than an accident or a serious incident that shall be reported according to ORO.GEN.160(a), flight recorders' recordings are not intentionally erased; and

(iii) in the event of an accident or a serious incident, or if preservation of recordings of flight recorders is directed by the investigating authority:

(A) flight recorders' recordings are not intentionally erased;

(B) flight recorders are deactivated immediately after the flight is completed; and

(C) precautionary measures to preserve the recordings of flight recorders are taken before leaving the flight crew compartment;

(11) decide on acceptance of the aircraft with unserviceabilities in accordance with the configuration deviation list (CDL) or the minimum equipment list (MEL);

(12) ensure that the pre-flight inspection has been carried out, in accordance with the applicable requirements for continuing airworthiness.

(13) be satisfied that relevant emergency equipment remains easily accessible for immediate use.

(14) record, at the termination of the flight, utilisation data and all known or suspected defects of the aircraft in the aircraft technical log or journey log of the aircraft to ensure continued flight safety

(15) Following an act of unlawful interference, the commander shall submit, without delay, a report of such an act to the designated local authority.

(b) The commander, or the pilot to whom conduct of the flight has been delegated, shall, in an emergency situation that requires immediate decision and action, take any action he/she considers necessary under the circumstances in accordance with the air operations requirements of the Air Navigation Act B.E 2497 and Kingdom of Thailand Civil Aviation Regulations. In such cases he/she may deviate from rules, operational procedures and methods in the interest of safety.

(c) Whenever an aircraft in flight has manoeuvred in response to an airborne collision avoidance system (ACAS) resolution advisory (RA), the commander shall submit an ACAS report to the CAAT.

(d) Bird hazards and strikes:

(1) Whenever a potential bird hazard is observed, the commander shall inform the air traffic service (ATS) unit as soon as flight crew workload allows.

(2) Whenever an aircraft for which the commander is responsible suffers a bird strike that results in significant damage to the aircraft or the loss or malfunction of any essential service, the commander shall submit a written bird strike report after landing to the CAAT.

(e) The commander shall, as soon as possible, report to the appropriate air traffic services (ATS) unit any hazardous weather or flight conditions encountered that are likely to affect the safety of other aircraft.

CAT.GEN.MPA.110 Authority of the commander

The operator shall take all reasonable measures to ensure that all persons carried in the aircraft obey all lawful commands given by the commander for the purpose of securing the safety of the aircraft and of persons or property carried therein.

CAT.GEN.MPA.115 Personnel or crew members other than cabin crew in the passenger compartment

The operator shall ensure that personnel or crew members, other than operating cabin crew members, carrying out their duties in the passenger compartment of an aircraft:

(a) are not confused by the passengers with operating cabin crew members;

(b) do not occupy required cabin crew assigned stations;

(c) do not impede operating cabin crew members in their duties.

CAT.GEN.MPA.120 Common language

The operator shall ensure that all crew members can communicate with each other in a common language.

CAT.GEN.MPA.124 Taxiing of aircraft

The operator shall establish procedures for taxiing of aircraft in order to ensure safe operation and in order to enhance runway safety.

CAT.GEN.MPA.125 Taxiing of aeroplanes

The operator shall ensure that an aeroplane is only taxied on the movement area of an aerodrome if the person at the controls:

(a) is an appropriately qualified pilot; or

(b) has been designated by the operator and:

(1) is trained to taxi the aircraft;

(2) is trained to use the radio telephone;

(3) has received instruction in respect of aerodrome layout, routes, signs, marking, lights, air traffic control (ATC) signals and instructions, phraseology and procedures;

(4) is able to conform to the operational standards required for safe aeroplane movement at the aerodrome.

CAT.GEN.MPA.130 Rotor engagement — helicopters

A helicopter rotor shall only be turned under power for the purpose of flight with a qualified pilot at the controls.

CAT.GEN.MPA.135 Admission to the flight crew compartment

(a) The operator shall ensure that no person, other than a flight crew member assigned to a flight, is admitted to, or carried in, the flight crew compartment unless that person is:

(1) an operating crew member;

(2) a representative of the competent or inspecting authority, if required to be there for the performance of his/her official duties; or

(3) permitted by and carried in accordance with instructions contained in the operations manual.

(b) The commander shall ensure that:

(1) admission to the flight crew compartment does not cause distraction or interference with the operation of the flight; and

(2) all persons carried in the flight crew compartment are made familiar with the relevant safety procedures.

(c) The commander shall make the final decision regarding the admission to the flight crew compartment.

CAT.GEN.MPA.140 Portable electronic devices

The operator shall not permit any person to use a portable electronic device (PED) on board an aircraft that could adversely affect the performance of the aircraft's systems and equipment, and shall take all reasonable measures to prevent such use.

CAT.GEN.MPA.141 Use of electronic flight bags (EFBs)

(a) Where an EFB is used on board an aircraft, the operator shall ensure that it does not adversely affect the performance of the aircraft systems or equipment, or the ability of the flight crew member to operate the aircraft.

(b) The operator shall not use a type B EFB application unless it is approved in accordance with Subpart M of TCAR OPS Part SPA.

CAT.GEN.MPA.145 Information on emergency and survival equipment carried

The operator shall at all times have available for immediate communication to rescue coordination centres (RCCs) lists containing information on the emergency and survival equipment carried on board any of their aircraft.

CAT.GEN.MPA.150 Ditching — aeroplanes

The operator shall only operate an aeroplane with a passenger seating configuration of more than 30 on overwater flights at a distance from land suitable for making an emergency landing, greater than 120 minutes at cruising speed, or 400 NM, whichever is less, if the aeroplane complies with the ditching provisions prescribed in the applicable certification specification or equivalent.

CAT.GEN.MPA.155 Carriage of weapons of war and munitions of war

(a) The operator shall only transport weapons of war or munitions of war by air if an approval to do so has been granted by all States whose airspace is intended to be used for the flight.

(b) Where an approval has been granted, the operator shall ensure that weapons of war and munitions of war are:

(1) stowed in the aircraft in a place that is inaccessible to passengers during flight; and

(2) in the case of firearms, unloaded.

(c) The operator shall ensure that, before a flight begins, the commander is notified of the details and location on board the aircraft of any weapons of war and munitions of war intended to be carried.

CAT.GEN.MPA.160 Carriage of sporting weapons and ammunition

(a) The operator shall take all reasonable measures to ensure that any sporting weapons intended to be carried by air are reported to the operator.

(b) The operator accepting the carriage of sporting weapons shall ensure that they are:

(1) stowed in the aircraft in a place that is inaccessible to passengers during flight; and

(2) in the case of firearms or other weapons that can contain ammunition, unloaded.

(c) Ammunition for sporting weapons may be carried in passengers' checked baggage, subject to certain limitations, in accordance with the technical instructions.

CAT.GEN.MPA.161 Carriage of sporting weapons and ammunition — alleviations

Notwithstanding CAT.GEN.MPA.160(b), for helicopters with a maximum certified take-off mass (MCTOM) of 3 175 kg or less operated by day and over routes navigated by reference to visual landmarks, a sporting weapon may be carried in a place that is accessible during flight, provided that the operator has established appropriate procedures and it is impracticable to stow it in an inaccessible stowage during flight.

CAT.GEN.MPA.165 Method of carriage of persons

The operator shall take all measures to ensure that no person is in any part of an aircraft in flight that is not designed for the accommodation of persons unless temporary access has been granted by the commander:

(a) for the purpose of taking action necessary for the safety of the aircraft or of any person, animal or goods therein; or

(b) to a part of the aircraft in which cargo or supplies are carried, being a part that is designed to enable a person to have access thereto while the aircraft is in flight.

CAT.GEN.MPA.170 Psychoactive substances

(a) The operator shall take all reasonable measures to ensure that no person enters or is in an aircraft when under the influence of psychoactive substances to the extent that the safety of the aircraft or its occupants is likely to be endangered.

(b) The operator shall develop and implement a policy on the prevention and detection of misuse of psychoactive substances by flight and cabin crew members and by other safety-sensitive personnel under its direct control, in order to ensure that the safety of the aircraft or its occupants is not endangered.

(c) Without prejudice to the applicable national legislation on data protection concerning testing of individuals, the operator shall develop and implement an objective, transparent and non-discriminatory procedure for the prevention and detection of cases of misuse of psychoactive substances by its flight and cabin crew and other safety-sensitive personnel.

(d) In case of a confirmed positive test result, the operator shall inform the CAAT.

CAT.GEN.MPA.175 Endangering safety

(a) The operator shall take all reasonable measures to ensure that no person recklessly or negligently acts or omits to act so as to:

  (1) endanger an aircraft or person therein; or
  (2) cause or permit an aircraft to endanger any person or property.

(b) The operator shall ensure that flight crew has undergone a psychological assessment before commencing line flying in order to:

  (1) identify psychological attributes and suitability of the flight crew in respect of the work environment; and
  (2) reduce the likelihood of negative interference with the safe operation of the aircraft.

(c) Considering the size, nature and complexity of the activity of an operator, an operator may replace the psychological assessment referred to in point (b) with an internal assessment of the psychological attributes and suitability of flight crew.

CAT.GEN.MPA.180 Documents, manuals and information to be carried

(a) The following documents, manuals and information shall be carried on each flight, as originals or copies unless otherwise specified:

(1) the aircraft flight manual (AFM), or equivalent document(s);
(2) the original certificate of registration;
(3) the original certificate of airworthiness (CofA);
(4) the noise certificate, including an English translation, where one has been provided by the authority responsible for issuing the noise certificate;
(5) a certified true copy of the air operator certificate (AOC), including an English translation when the AOC has been issued in another language;
(6) the operations specifications relevant to the aircraft type, issued with the AOC, including an English translation when the operations specifications have been issued in another language;
(7) the original aircraft radio licence, if applicable;
(8) the third party liability insurance certificate(s);
(9) the journey log, or equivalent, for the aircraft;
(10) the aircraft technical log in accordance with the applicable requirement for continuing airworthiness;
(11) details of the filed ATS flight plan, if applicable;
(12) current and suitable aeronautical charts for the route of the proposed flight and all routes along which it is reasonable to expect that the flight may be diverted;
(13) procedures and visual signals information for use by intercepting and intercepted aircraft;
(14) information concerning search and rescue services for the area of the intended flight, which shall be easily accessible in the flight crew compartment;
(15) the current parts of the operations manual that are relevant to the duties of the crew members, which shall be easily accessible to the crew members;
(16) the MEL;
(17) appropriate notices to airmen (NOTAMs) and aeronautical information service (AIS) briefing documentation;
(18) appropriate meteorological information;
(19) cargo and/or passenger manifests, if applicable (for instance international flight);
(20) mass and balance documentation;
(21) the operational flight plan, if applicable;
(22) notification of special categories of passenger (SCPs) and special loads, if applicable; and
(23) any other documentation that may be pertinent to the flight or is required by the States concerned with the flight.

(b) Notwithstanding (a), for operations under visual flight rules (VFR) by day with other-than complex motor-powered aircraft taking off and landing at the same aerodrome or operating site within 24 hours, or remaining within a local area specified in the operations manual, the following documents and information may be retained at the aerodrome or operating site instead:

(1) noise certificate;
(2) aircraft radio licence;
(3) journey log, or equivalent;
(4) aircraft technical log;
(5) NOTAMs and AIS briefing documentation;
(6) meteorological information;
(7) notification of SCPs and special loads, if applicable; and
(8) mass and balance documentation.

(c) Notwithstanding (a), in case of loss or theft of documents specified in (a)(2) to (a)(8), the operation may continue until the flight reaches its destination or a place where replacement documents can be provided.

CAT.GEN.MPA.185 Information to be retained on the ground

(a) The operator shall ensure that at least for the duration of each flight or series of flights:

(1) information relevant to the flight and appropriate for the type of operation is preserved on the ground;
(2) the information is retained until it has been duplicated at the place at which it will be stored; or, if this is impracticable
(3) the same information is carried in a fireproof container in the aircraft.

(b) The information referred to in (a) includes:

(1) a copy of the operational flight plan, where appropriate;
(2) copies of the relevant part(s) of the aircraft technical log;
(3) route-specific NOTAM documentation if specifically edited by the operator;
(4) mass and balance documentation if required; and
(5) special loads notification.

CAT.GEN.MPA.190 Provision of documentation and records

The commander shall, within a reasonable time of being requested to do so by a person authorised by an authority, provide to that person the documentation required to be carried on board.

CAT.GEN.MPA.195 Handling of flight recorder recordings: preservation, production, protection and use

(a) Following an accident, a serious incident or an occurrence identified by the investigating authority, the operator of an aircraft shall preserve the original recorded data of the flight recorders for a period of 60 days or until otherwise directed by the investigating authority.

(b) The operator shall conduct operational checks and evaluations of the recordings to ensure the continued serviceability of the flight recorders which are required to be carried under this Regulation.

(c) The operator shall ensure that the recordings of flight parameters and data link communication messages required to be recorded on flight recorders are preserved. However, for the purpose of testing and maintaining those flight recorders, up to 1 hour of the oldest recorded data at the time of testing may be erased.

(d) The operator shall keep and maintain up to date documentation that presents the necessary information to convert raw flight data into flight parameters expressed in engineering units

(e) The operator shall make available any flight recorder recordings that have been preserved, if so determined by the CAAT.

(f) Without prejudice to the Kingdom of Thailand Civil Aviation occurrence reporting regulation and other relevant national provisions

(1) Except for ensuring flight recorder serviceability, audio recordings from a flight recorder shall not be disclosed or used unless all of the following conditions are fulfilled:

(i) a procedure related to the handling of CVR recordings and of their transcript is in place;

(ii) all crew members and maintenance personnel concerned have given their prior consent; and

(iii) they are used only for maintaining or improving safety.

(1a) When inspecting flight recorder audio recordings to ensure flight recorder serviceability, the operator shall protect the privacy of those audio recordings and make sure that they are not disclosed or used for purposes other than for ensuring flight recorder serviceability.

(2) Flight parameters or data link messages recorded by a flight recorder shall not be used for purposes other than for the investigation of an accident or an incident which is subject to mandatory reporting, unless such recordings meet any of the following conditions:

(i) are used by the operator for airworthiness or maintenance purposes only; or

(ii) are de-identified; or

(iii) are disclosed under secure procedures.

(3) Except for ensuring flight recorder serviceability, images of the flight crew compartment that are recorded by a flight recorder shall not be disclosed or used unless all of the following conditions are fulfilled:

(i) a procedure related to the handling of such image recordings is in place;

(ii) all crew members and maintenance personnel concerned have given their prior consent;

(iii) such image recordings are used only for maintaining or improving safety.

(3a) When images of the flight crew compartment that are recorded by a flight recorder are inspected for ensuring the serviceability of the flight recorder, then:

(i) those images shall not be disclosed or used for purposes other than for ensuring flight recorder serviceability;

(ii) if body parts of crew members are likely to be visible on the images, the operator shall ensure the privacy of those images.

CAT.GEN.MPA.200 Transport of dangerous goods

(a) Unless otherwise permitted by this Regulation, the transport of dangerous goods by air shall be conducted in accordance with Annex 18 to the Chicago Convention as last amended and amplified by the 'Technical instructions for the safe transport of dangerous goods by air' (ICAO Doc 9284- AN/905), including its supplements and any other addenda or corrigenda.

The operator shall conduct in according with the regulation on The Civil Aviation Authority of Thailand No.4 on Transportation of Dangerous Goods by Air

(b) Dangerous goods shall only be transported by an operator approved in accordance with TCAR OPS Part SPA, Subpart G, except when:

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

(2) they are carried by passengers or crew members, or are in baggage, in accordance with Part 8 of the technical instructions.

(c) An operator shall establish procedures to ensure that all reasonable measures are taken to prevent dangerous goods from being carried on board inadvertently.

(d) The operator shall provide personnel with the necessary information enabling them to carry out their responsibilities, as required by the technical instructions.

(e) The operator shall, in accordance with the technical instructions, report without delay to the CAAT the and the appropriate authority of the State of occurrence in the event of:

(1) any dangerous goods accidents or incidents;

(2) the discovery of undeclared or misdeclared dangerous goods in cargo or mail; or

(3) the finding of dangerous goods carried by passengers or crew members, or in their baggage, when not in accordance with Part 8 of the technical instructions.

(f) The operator shall ensure that passengers are provided with information about dangerous goods in accordance with the technical instructions.

(g) The operator shall ensure that notices giving information about the transport of dangerous goods are provided at acceptance points for cargo as required by the technical instructions.

CAT.GEN.MPA.205 Aircraft tracking system — Aeroplanes

(a) By 16 December 2018 at the latest, the operator shall establish and maintain, as part of the system for exercising operational control over the flights, an aircraft tracking system, which includes the flights eligible to (b) when performed with the following aeroplanes:

(1) aeroplanes with an MCTOM of more than 27 000 kg, with an MOPSC of more than 19, and first issued with an individual CofA before 16 December 2018, which are equipped with a capability to provide a position additional to the secondary surveillance radar transponder;

(2) all aeroplanes with an MCTOM of more than 27 000 kg, with an MOPSC of more than 19, and first issued with an individual CofA on or after 16 December 2018; and

(3) all aeroplanes with an MCTOM of more than 45 500 kg, and first issued with an individual CofA on or after 16 December 2018;

(b) Flights shall be tracked by the operator from take-off to landing, except when the planned route and the planned diversion routes are fully included in airspace blocks where:

(1) ATS surveillance service is normally provided which is supported by ATC surveillance systems locating the aircraft at time intervals with adequate duration; and

(2) the operator has provided to competent air navigation service providers necessary contact information.

CAT.GEN.MPA.210 Location of an aircraft in distress — Aeroplanes

As of 1 January 2025, the following aeroplanes shall be equipped with robust and automatic means to accurately determine, following an accident during which the aeroplane is severely damaged, the location of the point of end of flight:

(a) all aeroplanes with an MCTOM of more than 27 000 kg, with an MOPSC of more than 19, and first issued with an individual CofA on or after 1 January 2024; and

(b) all aeroplanes with an MCTOM of more than 45 500 kg and first issued with an individual CofA on or after 1 January 2024.

CAT.GEN.MPA.215 Support Programme

(a) The operator shall enable, facilitate and ensure access to a proactive and non-punitive support programme that will assist and support flight crew in recognising, coping with, and overcoming any problem which might negatively affect their ability to safely exercise the privileges of their licence. Such access shall be made available to all flight crew.

(b) Without prejudice to applicable Kingdom of Thailand national legislation on the protection of individuals with regard to the processing of personal data an on the free movement of such data, the protection of the confidentiality of data shall be a precondition for an effective support programme as it encourages the use of such a programme and ensure its integrity.

CAT.GEN.MPA.220 Cosmic Radiation — Aeroplanes

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

SUBPART B: OPERATING PROCEDURES

SECTION 1 Motor-powered aircraft

CAT.OP.MPA.100 Use of air traffic services

(a) The operator shall ensure that:

(1) air traffic services (ATS) appropriate to the airspace and the applicable rules of the air are used for all flights whenever available;

(2) in-flight operational instructions involving a change to the ATS flight plan, when practicable, are coordinated with the appropriate ATS unit before transmission to an aircraft.

(b) Notwithstanding (a), the use of ATS is not required unless mandated by air space requirements for:

(1) operations under VFR by day of other-than complex motor-powered aeroplanes;

(2) helicopters with an MCTOM of 3 175 kg or less operated by day and over routes navigated by reference to visual landmarks; or

(3) local helicopter operations (LHOs),

provided that search and rescue service arrangements can be maintained.

CAT.OP.MPA.101 Altimeter check and settings

(a) The operator shall establish procedures for altimeter checking before each departure.

(b) The operator shall establish procedures for altimeter settings for all phases of flight, which shall take into account the procedures established by the State of the aerodrome or the State of the airspace, if applicable.

CAT.OP.MPA.105 Use of Aerodromes/Heliports and operating sites

(a) The operator shall only use aerodromes and operating sites that are adequate for the type(s) of aircraft and operation(s) concerned.

(b) The use of operating sites shall only apply to:

(1) other-than complex motor-powered aeroplanes; and

(2) helicopters.

CAT.OP.MPA.107 Adequate aerodrome

The operator shall consider an aerodrome as adequate if, at the expected time of use, the aerodrome is available and equipped with necessary ancillary services such as air traffic services (ATS), sufficient lighting, communications, meteorological reports, navigation aids and emergency services.

CAT.OP.MPA.110 Aerodrome operating minima

(a) The operator shall establish aerodrome operating minima for each departure, destination or alternate aerodrome that is planned to be used in order to ensure separation of the aircraft from terrain and obstacles and to mitigate the risk of loss of visual references during the visual flight segment of instrument approach operations.

(b) The method used to establish aerodrome operating minima shall take all the following elements into account:

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

(c) The operator shall specify the method of determining aerodrome operating minima in the operations manual.

(d) The method used by the operator to establish aerodrome operating minima and any change to that method shall be approved by the CAAT.

CAT.OP.MPA.115 Approach flight technique — aeroplanes

(a) All approach operations shall be flown as stabilised approach operations unless otherwise approved by the CAAT for a particular approach to a particular runway.

(b) The continuous descent final approach (CDFA) technique shall be used for approach operations using non-precision approach (NPA) procedures except for such particular runways for which the CAAT has approved another flight technique.

CAT.OP.MPA.125 Instrument departure and approach procedures

(a) The operator shall ensure that instrument departure and approach procedures established by the State of the aerodrome are used.

(b) Notwithstanding (a), the commander may accept an ATC clearance to deviate from a published departure or arrival route, provided obstacle clearance criteria are observed and full account is taken of the operating conditions. In any case, the final approach shall be flown visually or in accordance with the established instrument approach procedures.

(c) Notwithstanding (a), the operator may use procedures other than those referred to in (a) provided they have been approved by the State in which the aerodrome is located and are specified in the operations manual.

CAT.OP.MPA.126 Performance-based navigation

The operator shall ensure that, when performance-based navigation (PBN) is required for the route or procedure to be flown:

(a) the relevant PBN navigation specification is stated in the AFM or other document that has been approved by the certifying authority as part of an airworthiness assessment or is based on such approval; and

(b) the aircraft is operated in conformance with the relevant navigation specification and limitations in the AFM or other document referred above.

CAT.OP.MPA.130 Noise abatement procedures — aeroplanes

(a) Except for VFR operations of other-than complex motor-powered aeroplanes, the operator shall establish appropriate operating departure and arrival/approach procedures for each aeroplane type taking into account the need to minimise the effect of aircraft noise.

(b) The procedures shall:

(1) ensure that safety has priority over noise abatement; and

(2) be simple and safe to operate with no significant increase in crew workload during critical phases of flight.

CAT.OP.MPA.131 Noise abatement procedures — helicopters

(a) The operator shall ensure that take-off and landing procedures take into account the need to minimise the effect of helicopter noise.

(b) The procedures shall:

(1) ensure that safety has priority over noise abatement; and

(2) be simple and safe to operate with no significant increase in crew workload during critical phases of flight.

CAT.OP.MPA.135 Routes and areas of operation — general

(a) The operator shall ensure that operations are only conducted along routes, or within areas, for which:

(1) space-based facilities, ground facilities and services, including meteorological services, adequate for the planned operation are provided;

(2) the performance of the aircraft is adequate to comply with minimum flight altitude requirements;

(3) the equipment of the aircraft meets the minimum requirements for the planned operation; and

(4) appropriate maps and charts are available.

(b) The operator shall ensure that operations are conducted in accordance with any restriction on the routes or the areas of operation specified by the CAAT.

(c) point (a)(1) shall not apply to operations under VFR by day of other-than complex motor-powered aircraft on flights that depart from and arrive at the same aerodrome or operating site.

CAT.OP.MPA.136 Routes and areas of operation — single-engined aeroplanes

Unless approved by the CAAT in accordance with TCAR OPS Part SPA, Subpart L — SINGLE-ENGINED TURBINE AEROPLANE OPERATIONS AT NIGHT OR IN IMC (SET-IMC), the operator shall ensure that operations of single-engined aeroplanes are only conducted along routes, or within areas, where surfaces are available that permit a safe forced landing to be executed.

CAT.OP.MPA.137 Routes and areas of operation — helicopters

The operator shall ensure that:

(a) for helicopters operated in performance class 3, surfaces are available that permit a safe forced landing to be executed, except when the helicopter has an approval to operate in accordance with CAT.POL.H.420;

(b) for helicopters operated in performance class 3 and conducting 'coastal transit' operations, the operations manual contains procedures to ensure that the width of the coastal corridor, and the equipment carried, is consistent with the conditions prevailing at the time.

CAT.OP.MPA.140 Maximum distance from an adequate aerodrome for two-engined aeroplanes without an ETOPS/EDTO approval

(a) Unless approved by the CAAT in accordance with TCAR OPS Part SPA, Subpart F, the operator shall not operate a two-engined aeroplane over a route that contains a point further from an adequate aerodrome, under standard conditions in still air, than the appropriate distance for the given type of aeroplane among the following:

(1) for performance class A aeroplanes with a maximum operational passenger seating configuration (MOPSC) of 20 or more, the distance flown in 60 minutes at the one-engine-inoperative (OEI) cruising speed determined in accordance with point (b)

(2) for performance class A aeroplanes with an MOPSC of 19 or less, the distance flown in 120 minutes or, subject to approval by the CAAT, up to 180 minutes for turbojet aeroplanes, at the OEI cruising speed determined in accordance with point (b);

(3) for performance class B or C aeroplanes, whichever is less:

(i) the distance flown in 120 minutes at the OEI cruise speed determined in accordance with point (b);

(ii) 300 NM.

(b) The operator shall determine a speed for the calculation of the maximum distance to an adequate aerodrome for each two-engined aeroplane type or variant operated, not exceeding V_{MO} (maximum operating speed) based upon the true airspeed that the aeroplane can maintain with one engine inoperative.

(c) The operator shall include the following data, specific to each type or variant, in the operations manual:

(1) the determined OEI cruising speed; and

(2) the determined maximum distance from an adequate aerodrome.

(d) To obtain the approval referred to in point (a)(2), the operator shall provide evidence that:

(1) procedures have been established for flight planning and dispatch;

(2) specific maintenance instructions and procedures to ensure the intended levels of continued airworthiness and reliability of the aeroplane including its engines have been established and included in the operator's aircraft maintenance programme in accordance with the applicable requirement for continuing airworthiness, including:

(i) an engine oil consumption programme;

(ii) an engine condition monitoring programme;'

(3) the flight crew and all other operations personnel involved are trained and suitably qualified to conduct the intended operation.

CAT.OP.MPA.141 Additional requirements for operations by more than two engines aeroplanes with turbine engines beyond 60minutes to an en-route alternate aerodrome including extended diversion time operations (EDTO).

(a) Operators conducting operations beyond 60 minutes from a point on a route to an en route alternate aerodrome shall ensure that:

(1) procedures have been established for flight planning and dispatch;

(2) en-route alternates are identified and,

(3) the most up-to-date information is provided to the flight crew indicates on identified en-route alternates including operational status and meteorological conditions.

(b) Unless approved by the CAAT in accordance with TCAR OPS Part SPA, Subpart F, the operator shall not operate an aeroplane with more than two engines over a route that contains a point further than 180 minutes from an alternate aerodrome, under standard conditions in still air at the all engines operating cruising speed.

(c) The operator shall include the following data, specific to each type or variant, in the operations manual:

(1) the determined all engines operating cruising speed; and

(2) the determined maximum distance from an alternate aerodrome.

(d) the flight crew and all other operations personnel involved are trained and suitably qualified to conduct the intended operation.

CAT.OP.MPA.145 Establishment of minimum flight altitudes

(a) The operator shall establish for all route segments to be flown:

(1) minimum flight altitudes that provide the required terrain clearance, taking into account the requirements of Subpart C; and

(2) a method for the flight crew to determine those altitudes.

(b) The method for establishing minimum flight altitudes shall be approved by the CAAT.

(c) Where the minimum flight altitudes established by the operator and a State overflown differ, the higher values shall apply.

CAT.OP.MPA.150

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CAT.OP.MPA.155 Carriage of special categories of passengers (SCPs)

(a) Persons requiring special conditions, assistance and/or devices when carried on a flight shall be considered as SCPs including at least:

(1) persons with reduced mobility (PRMs) who, without prejudice to relevant Kingdom of Thailand national provisions, are understood to be any person whose mobility is reduced due to any physical disability, sensory or locomotory, permanent or temporary, intellectual disability or impairment, any other cause of disability, or age;

(2) infants and unaccompanied children; and

(3) deportees, inadmissible passengers or prisoners in custody.

(b) SCPs shall be carried under conditions that ensure the safety of the aircraft and its occupants according to procedures established by the operator.

(c) SCPs shall not be allocated, nor occupy, seats that permit direct access to emergency exits or where their presence could:

(1) impede crew members in their duties;

(2) obstruct access to emergency equipment; or

(3) impede the emergency evacuation of the aircraft.

(d) The commander shall be notified in advance when SCPs are to be carried on board.

CAT.OP.MPA.160 Stowage of baggage and cargo

The operator shall establish procedures to ensure that:

(a) only hand baggage that can be adequately and securely stowed is taken into the passenger compartment; and

(b) all baggage and cargo on board that might cause injury or damage, or obstruct aisles and exits if displaced, is stowed so as to prevent movement.

CAT.OP.MPA.165 Passenger seating

The operator shall establish procedures to ensure that passengers are seated where, in the event that an emergency evacuation is required, they are able to assist and not hinder evacuation of the aircraft.

CAT.OP.MPA.170 Passenger briefing

The operator shall ensure that passengers are:

(a) given briefings and demonstrations relating to safety in a form that facilitates the application of the procedures applicable in the event of an emergency; and

(b) provided with a safety briefing card on which picture-type instructions indicate the operation of emergency equipment and emergency exits likely to be used by passengers.

CAT.OP.MPA.175 Flight preparation

(a) An operational flight plan shall be completed for each intended flight based on considerations of aircraft performance, other operating limitations and relevant expected conditions on the route to be followed and at the aerodromes/operating sites concerned.

(b) The flight shall not be commenced unless the commander is satisfied that:

(1) all items stipulated in the Air Navigation Act B.E 2497 and Kingdom of Thailand Civil Aviation Regulations concerning the airworthiness and registration of the aircraft, instrument and equipment, mass and centre of gravity (CG) location, baggage and cargo and aircraft operating limitations can be complied with;

(2) the aircraft is not operated contrary to the provisions of the configuration deviation list (CDL);

(3) the parts of the operations manual that are required for the conduct of the flight are available;

(4) the documents, additional information and forms required to be available by CAT.GEN.MPA.180 are on board;

(5) current maps, charts and associated documentation or equivalent data are available to cover the intended operation of the aircraft including any diversion that may reasonably be expected;

(6) space-based facilities, ground facilities and services that are required for the planned flight are available and adequate;

(7) the provisions specified in the operations manual in respect of fuel/energy, oil, oxygen, minimum safe altitudes, aerodrome operating minima and availability of alternate aerodromes, where required, can be complied with for the planned flight;

(7a) any navigational database required for performance-based navigation is suitable and current; and

(8) any additional operational limitation can be complied with.

(c) Notwithstanding (a), an operational flight plan is not required for operations under VFR of:

(1) other-than complex motor-powered aeroplane taking off and landing at the same aerodrome or operating site; or

(2) helicopters with an MCTOM of 3 175 kg or less, by day and over routes navigated by reference to visual landmarks in a local area as specified in the operations manual.

CAT.OP.MPA.177 Submission of the ATS flight plan

(a) If an air traffic services (ATS) flight plan is not submitted because it is not required by the rules of the air, adequate information shall be deposited in order to permit alerting services to be activated if required.

(b) When operating from a site where it is impossible to submit an ATS flight plan, the ATS flight plan shall be transmitted as soon as possible after take-off by the commander or the operator.

CAT.OP.MPA.180 Fuel/energy scheme – aeroplanes

(a) The operator shall establish, implement, and maintain a fuel/energy scheme that:

(1) is appropriate for the type(s) of operation performed;

(2) corresponds to the capability of the operator to support its implementation; and

(3) is either:

(i) **a basic fuel/energy scheme**, and an individual fuel/energy scheme; the basic fuel/energy scheme derives from a large-scale analysis of safety and operational data from previous performance and experience of the industry, applying scientific principles; the basic fuel/energy scheme shall ensure, in this order, a safe, effective, and efficient operation of the aircraft; or

(ii) **a basic fuel/energy scheme with variations**, which is a basic fuel/energy scheme where the analysis referred to in point (i) is used to establish a variation to the basic fuel/energy scheme that ensures, in this order, a safe, effective, and efficient operation of the aircraft; or

(iii) **an individual fuel/energy scheme**, which derives from a comparative analysis of the operator's safety and operational data, applying scientific principles; the analysis is used to establish a fuel/energy scheme with a higher or equivalent level of safety to that of the basic fuel/energy scheme that ensures, in this order, a safe, effective, and efficient operation of the aircraft.

(b) All fuel/energy schemes shall comprise:

(1) a fuel/energy planning and in-flight re-planning policy;

(2) an aerodrome selection policy; and

(3) an in-flight fuel/energy management policy.

(c) The fuel/energy scheme and any change to it shall require prior approval by the CAAT.

(d) When the operator intends to apply for an individual fuel/energy scheme, it shall:

(1) establish a baseline safety performance of its current fuel/energy scheme;

(2) demonstrate its capability to support the implementation of the proposed individual fuel/energy scheme, including the capability to exercise adequate operational control and to ensure exchange of the relevant safety information between the operational control personnel and the flight crew; and

(3) make a safety risk assessment that demonstrates how an equivalent level of safety to that of the current fuel/energy scheme is achieved.

CAT.OP.MPA.181 Fuel/energy scheme – fuel/energy planning and in-flight re-planning policy – aeroplanes

(a) The operator shall:

(1) establish a fuel/energy planning and in-flight re-planning policy as part of the fuel/energy scheme;

(2) ensure that the aeroplane carries a sufficient amount of usable fuel/energy to safely complete the planned flight and to allow for deviations from the planned operation;

(3) develop procedures for the fuel/energy planning and in-flight re-planning policy that shall be contained in the operations manual.

(4) ensure that the fuel/energy planning of the flight is based on:

(i) current aircraft-specific data derived from a fuel/energy consumption monitoring system or, if not available;

(ii) data provided by the aeroplane manufacturer.

(b) The operator shall ensure that the planning of flights includes the operating conditions under which the flight is to be conducted; the operating conditions shall include at least:

(1) aircraft fuel/energy consumption data;
(2) anticipated masses;
(3) anticipated meteorological conditions;
(4) the effects of deferred maintenance items and/or of configuration deviations;
(5) the expected departure and arrival routing and runways; and
(6) anticipated delays.

(c) The operator shall ensure that the pre-flight calculation of the usable fuel/energy that is required for a flight includes:

(1) taxi fuel/energy that shall not be less than the amount expected to be used prior to take-off;

(2) trip fuel/energy that shall be the amount of fuel/energy that is required to enable the aeroplane to fly from take-off, or from the point of in-flight re-planning, to landing at the destination aerodrome;

(3) contingency fuel/energy that shall be the amount of fuel/energy required to compensate for unforeseen factors;

(4) destination alternate fuel/energy:

(i) when a flight is operated with at least one destination alternate aerodrome, it shall be the amount of fuel/energy required to fly from the destination aerodrome to the destination alternate aerodrome; or

(ii) when a flight is operated with no destination alternate aerodrome, it shall be the amount of fuel/energy required to hold at the destination aerodrome, while enabling the aeroplane to perform a safe landing, and to allow for deviations from the planned operation; as a minimum, this amount shall be 15-minute fuel/energy at holding speed at 1 500ft (450 m) above the aerodrome elevation in standard conditions, calculated according to the estimated aeroplane mass on arrival at the destination aerodrome;

(5) final reserve fuel/energy that shall be the amount of fuel/energy that is calculated at holding speed at 1 500ft (450 m) above the aerodrome elevation in standard conditions according to the aeroplane estimated mass on arrival at the destination alternate aerodrome, or destination aerodrome when no destination alternate aerodrome is required, and shall not be less than:

(i) for aeroplanes with reciprocating engines, the fuel/energy to fly for 45 minutes; or

(ii) for turbine-engined aeroplanes, the fuel/energy to fly for 30 minutes;

(6) additional fuel/energy, if required by the type of operation; it shall be the amount of fuel/energy to enable the aeroplane to land at a fuel/energy en route alternate aerodrome (fuel/energy ERA aerodrome critical scenario) in the event of an aircraft failure that significantly increases the fuel/energy consumption at the most critical point along the route; this additional fuel/energy is required only if the minimum amount of fuel/energy that is calculated according to points (c)(2) to (c)(5) is not sufficient for such an event;

(7) extra fuel/energy to take into account anticipated delays or specific operational constraints; and

(8) discretionary fuel/energy, if required by the commander.

(d) The operator shall ensure that in-flight re-planning procedures for calculating the usable fuel/energy that is required when a flight proceeds along a route or to a destination aerodrome other than the ones originally planned include points (c)(2) to (c)(7).

CAT.OP.MPA.182 Fuel/energy scheme – aerodrome selection policy – aeroplanes

(a) At the planning stage, the operator shall ensure that once the flight has commenced, there is reasonable certainty that an aerodrome where a safe landing can be made will be available at the estimated time of use of that aerodrome.

(b) At the planning stage, to allow for a safe landing in case of an abnormal or emergency situation after take-off, the operator shall select and specify in the operational flight plan a take-off alternate aerodrome if either:

(1) the meteorological conditions at the aerodrome of departure are below the operator's established aerodrome landing minima for that operation; or

(2) it would be impossible to return to the aerodrome of departure for other reasons.

(c) The take-off alternate aerodrome shall be located within a distance from the departure aerodrome that minimises the risk of exposure to potential abnormal or emergency situations. In selecting the take-off alternate aerodrome, the operator shall consider at least the following:

(1) actual and forecast meteorological conditions;

(2) availability and quality of the aerodrome infrastructure;

(3) navigation and landing capabilities of the aircraft in abnormal or emergency conditions, taking into account the redundancy of critical systems; and

(4) approvals held (e.g. extended range operations with two-engined aeroplanes (ETOPS), low visibility operation (LVO), etc.).

(d) At the planning stage, for each instrument flight rules (IFR) flight, the operator shall select and specify in the operational and air traffic services (ATS) flight plans one or more aerodromes so that two safe-landing options are available during normal operation when:

(1) reaching the destination aerodrome; or

(2) reaching the point of no return, to any available fuel/energy ERA aerodrome during isolated aerodrome operations; a flight to an isolated aerodrome shall not be continued past the point of no return unless a current assessment of meteorological conditions, traffic, and other operational conditions indicates that a safe landing can be made at the destination aerodrome at the estimated time of use.

The operator shall obtain prior approval from the CAAT for the use of an isolated aerodrome as destination aerodrome.

(e) The operator shall provide appropriate safety margins to flight planning to take into account a possible deterioration of the available forecast meteorological conditions at the estimated time of landing.

(f) For each IFR flight, the operator shall ensure that sufficient means are available to navigate to and land at the destination aerodrome or at any destination alternate aerodrome in the event of loss of capability for the intended approach and landing operation.

CAT.OP.MPA.185 Fuel/energy scheme – in-flight fuel/energy management policy – aeroplanes

(a) The operator shall establish procedures for in-flight fuel/energy management that ensure:

(1) continual validation of the assumptions made during the planning stage (pre-flight or in-flight re-planning, or both);

(2) re-analysis and adjustment, if necessary;

(3) that the amount of usable fuel/energy remaining on board is protected and not less than the fuel/energy that is required to proceed to an aerodrome where a safe landing can be made; and

(4) relevant fuel/energy data for the purpose of points (1), (2), and (3) shall be recorded.

(b) The operator shall have procedures in place to require the commander to obtain delay information from a reliable source when unforeseen circumstances may result in landing at the destination aerodrome with less than the final reserve fuel/energy plus any:

(1) fuel/energy to proceed to an alternate aerodrome, if required; or

(2) fuel/energy required to proceed to an isolated aerodrome.

(c) The commander shall advise air traffic control (ATC) of a 'minimum fuel/energy' state by declaring 'MINIMUM FUEL' when the commander has:

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

(2) calculated that any change to the existing clearance to that aerodrome may result in landing with less than the planned final reserve fuel/energy.

(d) The commander shall declare a situation of 'fuel/energy emergency' by broadcasting 'MAYDAY MAYDAY MAYDAY FUEL' when the usable fuel/energy that is calculated to be available upon landing at the nearest aerodrome where a safe landing can be made is less than the planned final reserve fuel/energy.

CAT.OP.MPA.190 Fuel/energy scheme – helicopters

(a) The operator shall establish, implement, and maintain a fuel/energy scheme that comprises:

(1) a fuel/energy planning and in-flight re-planning policy; and

(2) an in-flight fuel/energy management policy..

(b) The fuel/energy scheme shall:

(1) be appropriate for the type(s) of operation performed; and

(2) correspond to the capability of the operator to support its implementation.

(c) The fuel/energy scheme and any change to it shall require prior approval by the CAAT.

CAT.OP.MPA.191 Fuel/energy scheme – Fuel/energy planning and in-flight re-planning policy – helicopters

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

(b) The operator shall ensure that the fuel/energy planning of flights is based upon at least the following elements:

(1) procedures contained in the operations manual as well as:

(i) current aircraft-specific data derived from a fuel/energy consumption monitoring system; or

(ii) data provided by the aircraft manufacturer; and

(2) the operating conditions under which the flight is to be conducted including:

(i) aircraft fuel/energy consumption data;

(ii) anticipated masses;

(iii) anticipated meteorological conditions;

(iv) the effects of deferred maintenance items or of configuration deviations, or both; and

(v) procedures and restrictions introduced by air navigation service providers.

(c) The operator shall ensure that the pre-flight calculation of the usable fuel/energy that is required for a flight includes:

(1) taxi fuel/energy, which shall not be less than the amount expected to be used prior to take-off;

(2) trip fuel/energy;

(3) contingency fuel/energy;

(4) destination alternate fuel/energy if a destination alternate aerodrome is required;

(5) final reserve fuel/energy, which shall not be less than:

(i) if flying under visual flight rules (VFR) and navigating by day with reference to visual landmarks, 20-minute fuel/energy at best-range speed; or

(ii) if flying under VFR and navigating by means other than by reference to visual landmarks or at night, 30-minute fuel/energy at best-range speed; or

(iii) if flying under instrument flight rules (IFR), 30-minute fuel/energy at holding speed at 1 500ft (450 m) above the aerodrome elevation in standard conditions, calculated according to the helicopter estimated mass on arrival at the destination alternate aerodrome or at the destination aerodrome when no destination alternate aerodrome is required;

(6) extra fuel/energy, to take into account anticipated delays or specific operational constraints; and

(7) discretionary fuel/energy, if required by the commander.

(d) The operator shall ensure that if a flight has to proceed along a route or to a destination aerodrome other than the ones originally planned, in-flight re-planning procedures for calculating the required usable fuel/energy include:

(1) trip fuel/energy for the remainder of the flight;

(2) reserve fuel/energy consisting of:

(i) contingency fuel/energy;

(ii) alternate fuel/energy if a destination alternate aerodrome is required;

(iii) final reserve fuel/energy; and

(iv) additional fuel/energy, if required by the type of operation;

(3) extra fuel/energy, to take into account anticipated delays or specific operational constraints; and

(4) discretionary fuel/energy, if required by the commander.

(e) As an alternative to points (b) to (d), for helicopters with a maximum certified take-off mass (MCTOM) of 3 175kg or less, flying by day and over routes navigated by reference to visual landmarks, or for local helicopter operations (LHO), the fuel/energy policy shall ensure that on completion of the flight, or series of flights, the final reserve fuel/energy is sufficient for:

(1) 30-minute flying time at best-range speed; or

(2) 20-minute flying time at best-range speed, if operating within an area providing continuous and suitable operating sites.

CAT.OP.MPA.192 Selection of aerodromes and operating sites – helicopters

(a) For flights under instrument meteorological conditions (IMC), the operator shall select a take-off alternate aerodrome within one-hour flying time at normal cruising speed if it is not possible to return to the site of departure for meteorological reasons.

(b) At the planning stage, for each instrument flight rules (IFR) flight, the operator shall select and specify in the operational and air traffic services (ATS) flight plans one or more aerodromes or operating sites so that two safe-landing options are available during normal operation, except as provided for under point SPA. HOFO.120 (b).

(c) The operator shall apply appropriate safety margins to flight planning to take into account a possible deterioration of the available forecast meteorological conditions at the estimated time of landing.

(d) For each IFR flight, the operator shall ensure that sufficient means are available to navigate to and land at the destination aerodrome or at any destination alternate aerodrome in the event of loss of capability for the intended approach and landing operation.

CAT.OP.MPA.195 Fuel/energy scheme – in-flight fuel/energy management policy – helicopters

(a) The operator shall establish procedures to ensure that in-flight fuel/energy checks and fuel/energy management are performed.

(b) The commander shall monitor the amount of usable fuel/energy remaining on board to ensure that it is protected and not less than the fuel/energy that is required to proceed to an aerodrome or operating site where a safe landing can be made.

(c) The commander shall advise air traffic control (ATC) of a 'minimum fuel/energy' state by declaring 'MINIMUM FUEL' when the commander has:

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

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

(d) The commander shall declare a situation of 'fuel/energy emergency' by broadcasting 'MAYDAY MAYDAY MAYDAY FUEL' when the usable fuel/energy estimated to be available upon landing at the nearest aerodrome or operating site where a safe landing can be made is less than the planned final reserve fuel/energy.

CAT.OP.MPA.200 Special refuelling or defuelling of the aircraft

(a) Special refuelling or defuelling shall only be conducted if the operator:

(1) has performed a risk assessment;

(2) has developed procedures; and

(3) has established a training programme for its personnel involved in such operations.

(b) Special refuelling or defuelling applies to:

(1) refuelling with an engine running or rotors turning;

(2) refuelling/defuelling with passengers embarking, on board, or disembarking; and

(3) refuelling/defuelling with wide-cut fuel.

(c) For aeroplanes, any special refuelling or defuelling procedures and any change to them shall require prior approval by the CAAT.

(d) For helicopters, refuelling procedures with rotors turning and any change to them shall require prior approval by the CAAT.

CAT.OP.MPA.205 Push back and towing — aeroplanes

Push back and towing procedures specified by the operator shall be conducted in accordance with established aviation standards and procedures.

CAT.OP.MPA.210 Crew members at stations

(a) *Flight crew members*

(1) During take-off and landing each flight crew member required to be on duty in the flight crew compartment shall be at the assigned station.

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

(3) During all phases of flight each flight crew member required to be on duty in the flight crew compartment shall remain alert. If a lack of alertness is encountered, appropriate countermeasures shall be used. If unexpected fatigue is experienced, a controlled rest procedure, organised by the commander, may be used if workload permits. Controlled rest taken in this way shall not be considered to be part of a rest period for purposes of calculating flight time limitations nor used to justify any extension of the duty period.

(b) *Cabin crew members*

During critical phases of flight, each cabin crew member shall be seated at the assigned station and shall not perform any activities other than those required for the safe operation of the aircraft.

CAT.OP.MPA.215 Use of headset — aeroplanes

(a) Each flight crew member required to be on duty in the flight crew compartment shall wear a headset with boom microphone or equivalent. The headset shall be used as the primary device for voice communications with ATS:

(1) when on the ground:

(i) when receiving the ATC departure clearance via voice communication; and

(ii) when engines are running;

(2) when in flight:

(i) below transition altitude; or

(ii) 10 000 ft, whichever is higher; and

(3) whenever deemed necessary by the commander.

(b) In the conditions of (a), the boom microphone or equivalent shall be in a position that permits its use for two-way radio communications.

CAT.OP.MPA.216 Use of headset — helicopters

Each flight crew member required to be on duty in the flight crew compartment shall wear a headset with boom microphone, or equivalent, and use it as the primary device to communicate with ATS.

CAT.OP.MPA.220 Assisting means for emergency evacuation

The operator shall establish procedures to ensure that before taxiing, take-off and landing and when safe and practicable to do so, all means of assistance for emergency evacuation that deploy automatically are armed.

CAT.OP.MPA.225 Seats, safety belts and restraint systems

(a) *Crew members*

(1) During take-off and landing, and whenever decided by the commander in the interest of safety, each crew member shall be properly secured by all safety belts and restraint systems provided.

(2) During other phases of the flight, each flight crew member in the flight crew compartment shall keep the assigned station safety belt fastened while at his/her station.

(b) *Passengers*

(1) Before take-off and landing, and during taxiing, and whenever deemed necessary in the interest of safety, the commander shall be satisfied that each passenger on board occupies a seat or berth with his/her safety belt or restraint system properly secured.

(2) The operator shall make provisions for multiple occupancy of aircraft seats that is only allowed on specified seats. The commander shall be satisfied that multiple occupancy does not occur other than by one adult and one infant who is properly secured by a supplementary loop belt or other restraint device.

CAT.OP.MPA.230 Securing of passenger compartment and galley(s)

(a) The operator shall establish procedures to ensure that before taxiing, take-off and landing all exits and escape paths are unobstructed.

(b) The commander shall ensure that before take-off and landing, and whenever deemed necessary in the interest of safety, all equipment and baggage are properly secured.

CAT.OP.MPA.235 Life-jackets — helicopters

The operator shall establish procedures to ensure that, when operating a helicopter over water in performance class 3, account is taken of the duration of the flight and conditions to be encountered when deciding if life-jackets are to be worn by all occupants.

CAT.OP.MPA.240 Smoking on board

The commander shall not allow smoking on board:

(a) whenever considered necessary in the interest of safety;

(b) during refuelling and defuelling of the aircraft;

(c) while the aircraft is on the surface unless the operator has determined procedures to mitigate the risks during ground operations;

(d) outside designated smoking areas, in the aisle(s) and lavatory(ies);

(e) in cargo compartments and/or other areas where cargo is carried that is not stored in flame-resistant containers or covered by flame-resistant canvas; and

(f) in those areas of the passenger compartment where oxygen is being supplied.

CAT.OP.MPA.245 Meteorological conditions — all aircraft

(a) On IFR flights, the commander shall only:

(1) commence the flight; or

(2) continue beyond the point from which a revised ATS flight plan applies in the event of in-flight re-planning,

when information is available indicating that the expected meteorological conditions, at the time of arrival, at the destination and/or required alternate aerodrome(s) are at or above the planning minima.

(b) On IFR flights, the commander shall only continue towards the planned destination aerodrome when the latest information available indicates that, at the expected time of arrival, the meteorological conditions at the destination, or at least one destination alternate aerodrome, are at or above the applicable aerodrome operating minima.

(c) On VFR flights, the commander shall only commence the flight when the appropriate meteorological reports and/or forecasts indicate that the meteorological conditions along the part of the route to be flown under VFR will, at the appropriate time, be at or above the VFR limits.

CAT.OP.MPA.246 Meteorological conditions — aeroplanes

In addition to CAT.OP.MPA.245, on IFR flights with aeroplanes, the commander shall only continue beyond:

(a) the decision point when using the reduced contingency fuel/energy procedure; or

(b) point of no return when using the isolated aerodrome procedure,

when information is available indicating that the expected meteorological conditions, at the time of arrival, at the destination and/or required alternate aerodrome(s) are at or above the applicable aerodrome operating minima.

CAT.OP.MPA.247 Meteorological conditions — helicopters

In addition to CAT.OP.MPA.245:

(a) On VFR flights overwater out of sight of land with helicopters, the commander shall only commence take-off when the appropriate weather reports and/or forecasts indicate that the cloud ceiling will be above 600 ft by day or 1 200 ft by night.

(b) Flight with helicopters to a helideck or elevated FATO shall only be operated when the mean wind speed at the helideck or elevated FATO is reported to be less than 60 kt.

CAT.OP.MPA.250 Ice and other contaminants — ground procedures

(a) The operator shall establish procedures to be followed when ground de-icing and anti-icing and related inspections of the aircraft are necessary to allow the safe operation of the aircraft.

(b) The commander shall only commence take-off if the aircraft is clear of any deposit that might adversely affect the performance or controllability of the aircraft, except as permitted under (a) and in accordance with the AFM.

CAT.OP.MPA.255 Ice and other contaminants — flight procedures

(a) The operator shall establish procedures for flights in expected or actual icing conditions.

(b) The commander shall only commence a flight or intentionally fly into expected or actual icing conditions if the aircraft is certified and equipped to cope with such conditions.

(c) If icing exceeds the intensity of icing for which the aircraft is certified or if an aircraft not certified for flight in known icing conditions encounters icing, the commander shall exit the icing conditions without delay, by a change of level and/or route, if necessary by declaring an emergency to ATC.

CAT.OP.MPA.260 Fuel/energy and oil supply

The commander shall only commence a flight or continue in the event of in-flight re-planning, when satisfied that the aircraft carries at least the planned amount of usable fuel/energy and oil to safely complete the flight, taking into account the expected operating conditions.

CAT.OP.MPA.265 Take-off conditions

Before commencing take-off, the commander shall be satisfied that:

(a) the meteorological conditions at the aerodrome or operating site and the condition of the runway/FATO intended to be used will not prevent a safe take-off and departure; and

(b) the selected aerodrome operating minima are consistent with all of the following:

(1) the operative ground equipment;
(2) the operative aircraft systems;
(3) the aircraft performance;
(4) flight crew qualifications..

CAT.OP.MPA.270 Minimum flight altitudes

The commander or the pilot to whom conduct of the flight has been delegated shall not fly below specified minimum altitudes except when:

(a) necessary for take-off or landing; or

(b) descending in accordance with procedures approved by the CAAT.

CAT.OP.MPA.275 Simulated abnormal situations in flight

The operator shall ensure that when carrying passengers or cargo the following are not simulated:

(a) abnormal or emergency situations that require the application of abnormal or emergency procedures; or

(b) flight in IMC by artificial means.

CAT.OP.MPA.280

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CAT.OP.MPA.285 Use of supplemental oxygen

The commander shall ensure that flight crew members engaged in performing duties essential to the safe operation of an aircraft in flight use supplemental oxygen continuously whenever the cabin altitude exceeds 10 000 ft for a period of more than 30 minutes and whenever the cabin altitude exceeds 13 000 ft.

CAT.OP.MPA.290 Ground proximity detection

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

CAT.OP.MPA.295 Use of airborne collision avoidance system (ACAS)

The operator shall establish operational procedures and training programmes when ACAS is installed and serviceable so that the flight crew is appropriately trained in the avoidance of collisions and competent in the use of ACAS II equipment.

CAT.OP.MPA.300 Approach and landing conditions

Before commencing an approach operation, the commander shall be satisfied that:

(a) the meteorological conditions at the aerodrome or operating site and the condition of the runway/FATO intended to be used will not prevent a safe approach, landing or go-around, considering the performance information contained in the operations manual; and

(b) the selected aerodrome operating minima are consistent with all of the following:

(1) the operative ground equipment;
(2) the operative aircraft systems;
(3) the aircraft performance;
(4) flight crew qualifications..

CAT.OP.MPA.301 Approach and landing conditions — helicopters

Before commencing an approach to land, the commander shall be satisfied that according to the information available to him or her, the weather at the aerodrome and the condition of the final approach and take-off area (FATO) intended to be used would not prevent a safe approach, landing or missed approach, having regard to the performance information contained in the operations manual (OM).

CAT.OP.MPA.303 In-flight check of the landing distance at time of arrival — aeroplanes

(a) No approach to land shall be continued unless the landing distance available (LDA) on the intended runway is at least 115 % of the landing distance at the estimated time of landing, determined in accordance with the performance information for the assessment of the landing distance at time of arrival (LDTA) and the approach to land is performed with performance class A aeroplanes that are certified in accordance with either of the following certification specifications, as indicated in the type-certificate:

(1) EASA CS-25 or equivalent material acceptable to the CAAT ;
(2) EASA CS-23 at level 4 with performance level “High speed” or equivalent material acceptable to the CAAT.

(b) For performance class A aeroplanes other than those referred to in point (a), no approach to land shall be continued, except in either of the following situations:

(1) the LDA on the intended runway is at least 115 % of the landing distance at the estimated time of landing, determined in accordance with the performance information for the assessment of the LDTA;
(2) if performance information for the assessment of the LDTA is not available, the LDA on the intended runway at the estimated time of landing is at least the required landing distance determined in accordance with point CAT.POL.A.230 or point CAT.POL.A.235, as applicable.

(c) For performance class B aeroplanes, no approach to land shall be continued, except in either of the following situations:

(1) the LDA on the intended runway is at least 115 % of the landing distance at the estimated time of landing, determined in accordance with the performance information for the assessment of the LDTA;

(2) if performance information for the assessment of the LDTA is not available, the LDA on the intended runway at the estimated time of landing is at least the required landing distance determined in accordance with point CAT.POL.A.330 or point CAT.POL.A.335, as applicable.

(d) For performance class C aeroplanes, no approach to land shall be continued, except in either of the following situations:

(1) the LDA on the intended runway is at least 115 % of the landing distance at the estimated time of landing, determined in accordance with the performance information for the assessment of the LDTA;

(2) if performance information for the assessment of the LDTA is not available, the LDA on the intended runway at the estimated time of landing is at least the required landing distance determined in accordance with point CAT.POL.A.430 or point CAT.POL.A.435, as applicable.

(e) Performance information for the assessment of the LDTA shall be based on approved data contained in the AFM. When approved data contained in the AFM are insufficient in respect of the assessment of the LDTA, they shall be supplemented with other data which are either determined in accordance with the applicable certification standards for aeroplanes or determined in line with the AMCs issued by the CAAT.

(f) The operator shall specify in the OM the performance information for the assessment of the LDTA and the assumptions made for its development, including other data that, in accordance with point (e), may be used to supplement that contained in the AFM.

CAT.OP.MPA.305 Commencement and continuation of approach

(a) For aeroplanes, if the reported visibility (VIS) or controlling RVR for the runway to be used for landing is less than the applicable minimum, then an instrument approach operation shall not be continued:

(1) past a point at which the aeroplane is 1 000 ft above the aerodrome elevation; or

(2) into the final approach segment (FAS) if the DH or MDH is higher than 1 000 ft The commander or the pilot to whom conduct of the flight has been delegated may commence an instrument approach regardless of the reported RVR/VIS.

(b) For helicopters, if the reported RVR is less than 550 m and the controlling RVR for the runway to be used for landing is less than the applicable minimum, then an instrument approach operation shall not be continued:

(1) past a point at which the helicopter is 1 000 ft above the aerodrome elevation; or

(2) into the FAS if the DH or MDH is higher than 1 000 ft..

(c) If the required visual reference is not established, then a missed approach shall be executed at or before the DA/H or the MDA/H.

(d) If the required visual reference is not maintained after DA/H or MDA/H, then a go-around shall be executed promptly.

(e) Notwithstanding point (a), in the case where no RVR is reported, and the reported VIS is less than the applicable minimum, but the converted meteorological visibility (CMV) is equal or greater than the applicable minimum, then the instrument approach can be continued to the DA/H or MDA/H.

CAT.OP.MPA.310 Operating procedures — threshold crossing height — aeroplanes

The operator shall establish operational procedures designed to ensure that an aeroplane conducting 3D instrument approach operations crosses the threshold of the runway by a safe margin, with the aeroplane in the landing configuration and attitude.

CAT.OP.MPA.311 Reporting on runway braking action

Whenever the runway braking action encountered during the landing roll is not as good as that reported by the aerodrome operator in the runway condition report (RCR), the commander shall notify the air traffic services (ATS) by means of a special air-report (AIREP) as soon as practicable.

CAT.OP.MPA.312 EFVS 200 operations

(a) An operator that intends to conduct EFVS 200 operations shall ensure that:

(1) the aircraft is certified for the intended operations;

(2) only runways, FATO and instrument approach procedures (IAPs) suitable for EFVS operations are used;

(3) the flight crew members are competent to conduct the intended operation, and a training and checking programme for the flight crew members and relevant personnel involved in the flight preparation is established;

(4) operating procedures are established;

(5) any relevant information is documented in the minimum equipment list (MEL);

(6) any relevant information is documented in the maintenance programme;

(7) safety assessments are carried out and performance indicators are established to monitor the level of safety of the operation; and

(8) the aerodrome operating minima take into account the capability of the system used.

(b) The operator shall not conduct EFVS 200 operations when conducting LVOs.

(c) Notwithstanding point (a)(1), the operator may use EVSs meeting the minimum criteria to conduct EFVS 200 operations, provided that this is approved by the CAAT.

CAT.OP.MPA.315 Flight hours reporting — helicopters

The operator shall make available to the CAAT the hours flown for each helicopter operated during the previous calendar year.

CAT.OP.MPA.320 Aeroplane categories

(a) Aeroplane categories shall be based on the indicated airspeed at threshold (V_{AT}) which is equal to the stalling speed (V_{SO}) multiplied by 1.3 or one-g (gravity) stall speed (V_{S1g}) multiplied by 1.23 in the landing configuration at the maximum certified landing mass. If both V_{SO} and V_{S1g} are available, the higher resulting V_{AT} shall be used.

(b) The aeroplane categories specified in the table below shall be used.

Table 1 **Aeroplane categories corresponding to V_{AT} values**

Aeroplane category	VAT
A	Less than 91 kt
B	From 91 to 120 kt
C	From 121 to 140 kt
D	From 141 to 165 kt
E	From 166 to 210 kt

(c) The landing configuration that is to be taken into consideration shall be specified in the operations manual.

(d) The operator may apply a lower landing mass for determining the V_{AT} if approved by the CAAT. Such a lower landing mass shall be a permanent value, independent of the changing conditions of day-to-day operations.

SUBPART C: AIRCRAFT PERFORMANCE AND OPERATING LIMITATIONS

SECTION 1 Aeroplanes

CHAPTER 1 - General requirements

CAT.POL.A.100 Performance classes

(a) The aeroplane shall be operated in accordance with the applicable performance class requirements.

(b) Where full compliance with the applicable requirements of this Section cannot be shown due to specific design characteristics, the operator shall apply approved performance standards that ensure a level of safety equivalent to that of the appropriate chapter.

(c) Single engine turbine aeroplanes with an approved MOPSC of more than 9 seats may be operated under the following conditions:

(i) When carrying 9 or less passengers, the performance requirements of Chapter 3 of Sub-part CAT.POL are applicable;

(ii) When carrying more than 9 passengers.

- the performance requirements of Chapter 3 of Subpart CAT.POL are applicable.
- The aeroplane is operated with 2 pilots,
- Aeroplane operation is limited to day VFR, ground or water kept in sight,
- Landing on contaminated runways is prohibited,
- Maximum number of passengers is limited to 12.

CAT.POL.A.105 General

(a) The mass of the aeroplane:

(1) at the start of the take-off; or

(2) in the event of in-flight replanning, at the point from which the revised operational flight plan applies,

shall not be greater than the mass at which the requirements of the appropriate chapter can be complied with for the flight to be undertaken. Allowance may be made for expected reductions in mass as the flight proceeds and for fuel jettisoning.

(b) The approved performance data contained in the AFM shall be used to determine compliance with the requirements of the appropriate chapter, supplemented as necessary with other data as prescribed in the relevant chapter. The operator shall specify other data in the operations manual. When applying the factors prescribed in the appropriate chapter, account may be taken of any operational factors already incorporated in the AFM performance data to avoid double application of factors.

(c) Due account shall be taken of aeroplane configuration, environmental conditions and the operation of systems that have an adverse effect on performance.

(d) The operator shall take account of charting accuracy when assessing the take-off requirements of the applicable chapters.

CHAPTER 2 Performance class A

CAT.POL.A.200 General

(a) The approved performance data in the AFM shall be supplemented as necessary with other data if the approved performance data in the AFM is insufficient in respect of items such as:

(1) accounting for reasonably expected adverse operating conditions such as take-off and landing on contaminated runways; and

(2) consideration of engine failure in all flight phases.

(b) For wet and contaminated runways, performance data determined in accordance with applicable standards on certification of large aeroplanes or equivalent shall be used.

(c) The use of other data referred to in (a) and equivalent requirements referred to in (b) shall be specified in the operations manual.

CAT.POL.A.205 Take-off

(a) The take-off mass shall not exceed the maximum take-off mass specified in the AFM for the pressure altitude and the ambient temperature at the aerodrome of departure.

(b) The following requirements shall be met when determining the maximum permitted take-off mass:

(1) the accelerate-stop distance shall not exceed the accelerate-stop distance available (ASDA);

(2) the take-off distance shall not exceed the take-off distance available, with a clearway distance not exceeding half of the take-off run available (TORA);

(3) the take-off run shall not exceed the TORA;

(4) a single value of V_1 shall be used for the rejected and continued take-off; and

(5) on a wet or contaminated runway, the take-off mass shall not exceed that permitted for a take-off on a dry runway under the same conditions.

(c) When showing compliance with (b), the following shall be taken into account:

(1) the pressure altitude at the aerodrome;

(2) the ambient temperature at the aerodrome;

(3) the runway surface condition and the type of runway surface;

(4) the runway slope in the direction of take-off;

(5) not more than 50 % of the reported headwind component or not less than 150 % of the reported tailwind component; and

(6) the loss, if any, of runway length due to alignment of the aeroplane prior to take-off.

CAT.POL.A.210 Take-off obstacle clearance

(a) The net take-off flight path shall be determined in such a way that the aeroplane clears all obstacles by a vertical distance of at least 35 ft or by a horizontal distance of at least 90 m plus 0.125 × D, where D is the horizontal distance the aeroplane has travelled from the end of the take- off distance available (TODA) or the end of the take-off distance if a turn is scheduled before the end of the TODA. For aeroplanes with a wingspan of less than 60 m, a horizontal obstacle clearance of half the aeroplane wingspan plus 60 m, plus 0.125 × D may be used.

(b) When showing compliance with (a):

(1) The following items shall be taken into account:

(i) the mass of the aeroplane at the commencement of the take-off run;

(ii) the pressure altitude at the aerodrome;

(iii) the ambient temperature at the aerodrome; and

(iv) not more than 50 % of the reported headwind component or not less than 150 % of the reported tailwind component.

(2) Track changes shall not be allowed up to the point at which the net take-off flight path has achieved a height equal to one half the wingspan but not less than 50 ft above the elevation of the end of the TORA. Thereafter, up to a height of 400 ft it is assumed that the aeroplane is banked by no more than 15°. Above 400 ft height bank angles greater than 15°, but not more than 25° may be scheduled.

(3) Any part of the net take-off flight path in which the aeroplane is banked by more than 15° shall clear all obstacles within the horizontal distances specified in (a), (b)(6) and (b)(7) by a vertical distance of at least 50 ft.

(4) Operations that apply increased bank angles of not more than 20° between 200 ft and 400 ft, or not more than 30° above 400 ft, shall be carried out in accordance with CAT.POL.A.240.

(5) Adequate allowance shall be made for the effect of bank angle on operating speeds and flight path including the distance increments resulting from increased operating speeds.

(6) For cases where the intended flight path does not require track changes of more than 15°, the operator does not need to consider those obstacles that have a lateral distance greater than:

(i) 300 m, if the pilot is able to maintain the required navigational accuracy through the obstacle accountability area; or

(ii) 600 m, for flights under all other conditions.

(7) For cases where the intended flight path requires track changes of more than 15°, the operator does not need to consider those obstacles that have a lateral distance greater than:

(i) 600 m, if the pilot is able to maintain the required navigational accuracy through the obstacle accountability area; or

(ii) 900 m, for flights under all other conditions.

(c) The operator shall establish contingency procedures to satisfy the requirements in (a) and (b) and to provide a safe route, avoiding obstacles, to enable the aeroplane to either comply with the en- route requirements of CAT.POL.A.215, or land at either the aerodrome of departure or at a take- off alternate aerodrome.

CAT.POL.A.215 En-route — one-engine-inoperative (OEI)

(a) The OEI en-route net flight path data shown in the AFM, appropriate to the meteorological conditions expected for the flight, shall allow demonstration of compliance with (b) or (c) at all points along the route. The net flight path shall have a positive gradient at 1 500 ft above the aerodrome where the landing is assumed to be made after engine failure. In meteorological conditions requiring the operation of ice protection systems, the effect of their use on the net flight path shall be taken into account.

(b) The gradient of the en-route net flight path shall be positive at least 1 000 ft above all terrain and obstructions along the route within 9.3 km (5 NM) on either side of the intended track.

(c) The en-route net flight path shall permit the aeroplane to continue flight from the cruising altitude to an aerodrome where a landing can be made in accordance with point CAT.POL.A.230 or CAT.POL.A.235, as appropriate. The en-route net flight path shall clear vertically, by at least 2 000 ft, all terrain and obstructions along the route within 9.3 km (5 NM) on either side of the intended track, taking into account the following elements:

(1) the engine is assumed to fail at the most critical point along the route;

(2) account is taken of the effects of winds on the flight path;

(3) fuel jettisoning is permitted to an extent consistent with reaching the aerodrome where the aeroplane is assumed to land after engine failure with the required fuel reserves in accordance with point CAT.OP. MPA.181, appropriate for an alternate aerodrome, if a safe procedure is used

(4) the aerodrome where the aeroplane is assumed to land after engine failure shall meet the following criteria:

(i) the performance requirements at the expected landing mass are met; and

(ii) weather reports or forecasts and runway condition reports indicate that a safe landing can be accomplished at the estimated time of landing;

(5) if the AFM does not contain en-route net flight path data, the gross OEI en-route flight path shall be reduced by a climb gradient of 1.1 % for two-engined aeroplanes, 1.4 % for three-engined aeroplanes, and 1.6 % for four-engined aeroplanes.

(d) The operator shall increase the width margins provided for in points (b) and (c) to 18.5 km (10 NM) if the navigational accuracy does not meet at least navigation specification RNAV 5.

CAT.POL.A.220 En-route — aeroplanes with three or more engines, two engines inoperative

(a) An aeroplane that has three or more engines shall not be away from an aerodrome at which the requirements of points CAT.POL.A.230 or CAT.POL.A.235(a) for the expected landing mass are met accordingly, at any point along the intended track for more than 90 minutes, with all engines operating at cruising power or thrust, as appropriate, at standard temperature in still air, unless points (b) to (f) of this point are complied with.

(b) The two-engines-inoperative en-route net flight path data shall allow the aeroplane to continue the flight, in the expected meteorological conditions, from the point where two engines are assumed to fail simultaneously to an aerodrome at which it is possible to land and come to a complete stop when using the prescribed procedure for a landing with two engines inoperative. The en-route net flight path shall clear vertically, by at least 2 000 ft, all terrain and obstructions along the route within 9.3 km (5 NM) on either side of the intended track. At altitudes and in meteorological conditions that require ice protection systems to be operable, the effect of their use on the en-route net flight path data shall be taken into account. If the navigational accuracy does not meet at least navigation specification RNAV 5, the operator shall increase the prescribed width margin provided for in the second sentence to 18.5 km (10 NM).

(c) The two engines shall be assumed to fail at the most critical point of that portion of the route where the aeroplane is operated for more than 90 minutes, with all engines operating at cruising power or thrust, as appropriate, at standard temperature in still air, away from the aerodrome referred to in point (a).

(d) The net flight path shall have a positive gradient at 1 500 ft above the aerodrome where the landing is assumed to be made after the failure of two engines.

(e) Fuel jettisoning shall be permitted to an extent consistent with reaching the aerodrome with the required fuel reserves referred to in point (f), if a safe procedure is used

(f) The expected mass of the aeroplane at the point where the two engines are assumed to fail shall not be less than that which would include sufficient fuel/energy to proceed to an aerodrome where the landing is assumed to be made, and to arrive there at an altitude of at least 1 500ft (450 m) directly over the landing area, and thereafter, to fly for 15 minutes at cruising power or thrust, as appropriate.

CAT.POL.A.225 Landing — destination and alternate aerodromes

(a) The landing mass of the aeroplane determined in accordance with CAT.POL.A.105(a) shall not exceed the maximum landing mass specified for the altitude and the ambient temperature expected for the estimated time of landing at the destination aerodrome and alternate aerodrome.

CAT.POL.A.230 Landing – dry runways

(a) The landing mass of the aeroplane determined in accordance with CAT.POL.A.105(a) for the estimated time of landing at the destination aerodrome and at any alternate aerodrome shall allow a full stop landing from 50 ft above the threshold:

(1) for turbo-jet powered aeroplanes, within 60 % of the landing distance available (LDA); and

(2) for turbo-propeller powered aeroplanes, within 70 % of the LDA.

(3) by way of derogation from points (a)(1) and (a)(2), for aeroplanes that are approved for reduced landing distance operations under point CAT.POL.A.255, within 80 % of the LDA.

(b) For steep approach operations, the operator shall use the landing distance data factored in accordance with (a)(1) or (a)(2), based on a screen height of less than 60 ft, but not less than 35 ft, and shall comply with CAT.POL.A.245.

(c) For short landing operations, the operator shall use the landing distance data factored in accordance with (a) and shall comply with CAT.POL.A.250.

(d) When determining the landing mass, the operator shall take into account the following:

(1) not more than 50 % of the headwind component or not less than 150 % of the tailwind component;

(2) corrections as provided in the AFM.

(e) For dispatching the aeroplane, the aeroplane shall:

(1) land on the most favourable runway, in still air; and

(2) land on the runway most likely to be assigned, considering the probable wind speed and direction, the ground-handling characteristics of the aeroplane and other conditions such as landing aids and terrain

(f) If the operator is unable to comply with point (e)(2) for the destination aerodrome, the aeroplane shall only be dispatched if an alternate aerodrome is designated that allows full compliance with one of the following:

(1) points (a) to (d), if the runway at the estimated time of arrival is dry;

(2) points CAT.POL.A.235(a) to (d), if the runway at the estimated time of arrival is wet or contaminated

CAT.POL.A.235 Landing – wet and contaminated runways

(a) When the appropriate weather reports or forecasts, or both, indicate that the runway at the estimated time of arrival may be wet, the LDA shall be one of the following distances:

(1) a landing distance provided in the AFM for use on wet runways at time of dispatch, but not less than that required by point CAT.POL.A.230(a)(1) or (a)(2), as applicable;

(2) if a landing distance is not provided in the AFM for use on wet runways at time of dispatch, at least 115 % of the required landing distance, determined in accordance with point CAT.POL.A.230(a)(1) or (a)(2), as applicable;

(3) a landing distance shorter than that required by point (a)(2), but not less than that required by point CAT.POL.A.230(a)(1) or (a)(2), as applicable, if the runway has specific friction-improving characteristics and the AFM includes specific additional information for landing distance on that runway type;

(4) by way of derogation from points (a)(1), (a)(2) and (a)(3), for aeroplanes that are approved for reduced landing distance operations under point CAT.POL.A.255, the landing distance determined in accordance with point CAT.POL.A.255(b)(2)(v)(B).

(b) When the appropriate weather reports or forecasts indicate that the runway at the estimated time of arrival may be contaminated, the LDA shall be one of the following distances:

(1) at least the landing distance determined in accordance with point (a), or at least 115 % of the landing distance determined in accordance with approved contaminated landing distance data or equivalent, whichever is greater;

(2) on specially prepared winter runways, a landing distance shorter than that required by point (b)(1), but not less than that required by point (a), may be used if the AFM includes specific additional information about landing distances on contaminated runways. Such landing distance shall be at least 115 % of the landing distance contained in the AFM.

(c) By way of derogation from point (b), the increment of 15 % needs not to be applied if it is already included in the approved landing distance data or equivalent.

(d) For points (a) and (b), the criteria of points CAT.POL.A.230(b), (c) and (d) shall apply accordingly.

(e) For dispatching the aeroplane, the aeroplane shall:

(1) land on the most favourable runway, in still air; and

(2) land on the runway most likely to be assigned, considering the probable wind speed and direction, the ground-handling characteristics of the aeroplane and other conditions such as landing aids and terrain.

(f) If the operator is unable to comply with point (e)(1) for a destination aerodrome where the appropriate weather reports or forecasts indicate that the runway at the estimated time of arrival may be contaminated and where a landing depends upon a specific wind component, the aeroplane shall only be dispatched if two alternate aerodromes are designated.

(g) If the operator is unable to comply with point (e)(2) for the destination aerodrome where the appropriate weather reports or forecasts indicate that the runway at the estimated time of arrival may be wet or contaminated, the aeroplane shall only be dispatched if an alternate aerodrome is designated.

(h) For points (f) and (g), the designated alternate aerodrome or aerodromes shall allow compliance with one of the following:

(1) points CAT.POL.A.230(a) to (d), if the runway at the estimated time of arrival is dry;

(2) points CAT.POL.A.235(a) to (d), if the runway at the estimated time of arrival is wet or contaminated.

CAT.POL.A.240 Approval of operations with increased bank angles

(a) Operations with increased bank angles require prior approval by the CAAT.

(b) To obtain the approval, the operator shall provide evidence that the following conditions are met:

(1) the AFM contains approved data for the required increase of operating speed and data to allow the construction of the flight path considering the increased bank angles and speeds;

(2) visual guidance is available for navigation accuracy;

(3) weather minima and wind limitations are specified for each runway; and

(4) the flight crew has obtained adequate knowledge of the route to be flown and of the procedures to be used in accordance with Subpart FC of Part ORO.

CAT.POL.A.245 Approval of steep approach operations

(a) Steep approach operations using glideslope angles of 4.5° or more and with screen heights of less than 60 ft, but not less than 35 ft, require prior approval by the CAAT.

(b) To obtain the approval, the operator shall provide evidence that the following conditions are met:

(1) the AFM states the maximum approved glideslope angle, any other limitations, normal, abnormal or emergency procedures for the steep approach as well as amendments to the field length data when using steep approach criteria;

(2) for each aerodrome at which steep approach operations are to be conducted:

(i) a suitable glide path reference system comprising at least a visual glide path indicating system shall be available;

(ii) weather minima shall be specified; and

(iii) the following items shall be taken into consideration:

(A) the obstacle situation;

(B) the type of glide path reference and runway guidance;

(C) the minimum visual reference to be required at decision height (DH) and MDA;

(D) available airborne equipment;

(E) pilot qualification and special aerodrome familiarisation;

(F) AFM limitations and procedures; and

(G) missed approach criteria.

CAT.POL.A.250 Approval of short landing operations

(a) Short landing operations require prior approval by the CAAT.

(b) To obtain the approval, the operator shall provide evidence that the following conditions are met:

(1) the distance used for the calculation of the permitted landing mass may consist of the usable length of the declared safe area plus the declared LDA;

(2) the State of the aerodrome has determined a public interest and operational necessity for the operation, either due to the remoteness of the aerodrome or to physical limitations relating to extending the runway;

(3) the vertical distance between the path of the pilot's eye and the path of the lowest part of the wheels, with the aeroplane established on the normal glide path, does not exceed 3 m;

(4) RVR/VIS minimum shall not be less than 1 500 m and wind limitations are specified in the operations manual;

(5) minimum pilot experience, training and special aerodrome familiarisation requirements are specified and met;

(6) the crossing height over the beginning of the usable length of the declared safe area is 50 ft;

(7) the use of the declared safe area is approved by the State of the aerodrome;

(8) the usable length of the declared safe area does not exceed 90 m;

(9) the width of the declared safe area is not less than twice the runway width or twice the wing span, whichever is greater, centred on the extended runway centre line;

(10) the declared safe area is clear of obstructions or depressions that would endanger an aeroplane undershooting the runway and no mobile object is permitted on the declared safe area while the runway is being used for short landing operations;

(11) the slope of the declared safe area does not exceed 5 % upward nor 2 % downward in the direction of landing; and

(11a) reduced required landing distance operations in accordance with CAT.POL.A.255 are prohibited;

(12) additional conditions, if specified by the CAAT, taking into account aeroplane type characteristics, orographic characteristics in the approach area, available approach aids and missed approach/balked landing considerations.

CAT.POL.A.255 Approval of reduced required landing distance operations

(a) An aeroplane operator may conduct landing operations within 80 % of the landing distance available (LDA) if it complies with the following conditions:

(1) the airplane has an MOPSC of 19 or less;

(2) the airplane has an eligibility statement for reduced required landing distance in the AFM;

(3) the airplane is used in non-scheduled on-demand commercial air transport (CAT) operations;

(4) the landing mass of the aeroplane allows a full-stop landing within that reduced landing distance;

(5) the operator has obtained a prior approval from the CAAT.

(b) To obtain the approval referred to in point (a)(5), the operator shall provide evidence of either of the following circumstances:

(1) that a risk assessment has been conducted to demonstrate that a level of safety equivalent to that intended by point CAT.POL.A.230(a)(1) or (2), as applicable, is achieved;

(2) that the following conditions are met:

(i) special-approach procedures, such as steep approaches, planned screen heights higher than 60 ft or lower than 35 ft, low-visibility operations, approaches outside stabilised approach criteria approved under point CAT.OP.MPA.115(a), are prohibited;

(ii) short landing operations in accordance with point CAT.POL.A.250 are prohibited;

(iii) landing on contaminated runways is prohibited;

(iv) an adequate training, checking and monitoring process for the flight crew is established;

(v) an aerodrome landing analysis programme (ALAP) is established by the operator to ensure that the following conditions are met:

(A) no tailwind is forecast at the expected time of arrival;

(B) if the runway is forecast to be wet at the expected time of arrival, the landing distance at dispatch shall either be determined in accordance with point CAT.OP.MPA.303(a) or (b) as applicable, or shall be 115 % of the landing distance determined for dry runways, whichever is longer;

(C) no forecast contaminated runway conditions exist at the expected time of arrival;

(D) no forecast adverse weather conditions exist at the expected time of arrival;

(vi) all the equipment that affects landing performance is operative before commencing the flight;

(vii) the flight crew is composed of at least two qualified and trained pilots that have recency in reduced required landing distance operations;

(viii) based on the prevailing conditions for the intended flight, the commander shall make the final decision to conduct reduced required landing distance operations and may decide not to do so when he or she considers that to be in the interest of safety;

(ix) additional aerodrome conditions, if specified by the competent authority that has certified the aerodrome, taking into account orographic characteristics of the approach area, available approach aids, missed-approach and balked-landing considerations.

CHAPTER 3 Performance Class B

CAT.POL.A.300 General

(a) Unless approved by the CAAT in accordance with TCAR OPS Part SPA, Subpart L — SINGLE-ENGINED TURBINE AEROPLANE OPERATIONS AT NIGHT OR IN IMC (SET-IMC), the operator shall not operate a single-engined aeroplane:

(1) at night; or

(2) in IMC, except under special VFR.

(b) The operator shall treat two-engined aeroplanes that do not meet the climb requirements of CAT.POL.A.340 as single-engined aeroplanes.

CAT.POL.A.305 Take-off

(a) The take-off mass shall not exceed the maximum take-off mass specified in the AFM for the pressure altitude and the ambient temperature at the aerodrome of departure.

(b) The unfactored take-off distance, specified in the AFM, shall not exceed:

(1) when multiplied by a factor of 1.25, the take-off run available (TORA); or

(2) when stop way and/or clearway is available, the following:

(i) the TORA;

(ii) when multiplied by a factor of 1.15, the take-off distance available (TODA); or

(iii) when multiplied by a factor of 1.3, the ASDA.

(c) When showing compliance with (b), the following shall be taken into account:

(1) the mass of the aeroplane at the commencement of the take-off run;

(2) the pressure altitude at the aerodrome;

(3) the ambient temperature at the aerodrome;

(4) the runway surface condition and the type of runway surface;

(5) the runway slope in the direction of take-off; and

(6) not more than 50 % of the reported headwind component or not less than 150 % of the reported tailwind component.

CAT.POL.A.310 Take-off obstacle clearance — multi-engined aeroplanes

(a) The take-off flight path of aeroplanes with two or more engines shall be determined in such a way that the aeroplane clears all obstacles by a vertical distance of at least 50 ft, or by a horizontal distance of at least 90 m plus 0.125 × D, where D is the horizontal distance travelled by the aeroplane from the end of the TODA or the end of the take-off distance if a turn is scheduled before the end of the TODA, except as provided in (b) and (c). For aeroplanes with a wingspan of less than 60 m, a horizontal obstacle clearance of half the aeroplane wingspan plus 60 m plus 0.125 × D may be used. It shall be assumed that:

(1) the take-off flight path begins at a height of 50 ft above the surface at the end of the take-off distance required by CAT.POL.A.305(b) and ends at a height of 1 500 ft above the surface;

(2) the aeroplane is not banked before the aeroplane has reached a height of 50 ft above the surface, and thereafter the angle of bank does not exceed 15°;

(3) failure of the critical engine occurs at the point on the all engine take-off flight path where visual reference for the purpose of avoiding obstacles is expected to be lost;

(4) the gradient of the take-off flight path from 50 ft to the assumed engine failure height is equal to the average all-engines gradient during climb and transition to the en-route configuration, multiplied by a factor of 0.77; and

(5) the gradient of the take-off flight path from the height reached in accordance with (a)(4) to the end of the take-off flight path is equal to the OEI en-route climb gradient shown in the AFM.

(b) For cases where the intended flight path does not require track changes of more than 15°, the operator does not need to consider those obstacles that have a lateral distance greater than:

(1) 300 m, if the flight is conducted under conditions allowing visual course guidance navigation, or if navigational aids are available enabling the pilot to maintain the intended flight path with the same accuracy; or

(2) 600 m, for flights under all other conditions.

(c) For cases where the intended flight path requires track changes of more than 15°, the operator does not need to consider those obstacles that have a lateral distance greater than:

(1) 600 m, for flights under conditions allowing visual course guidance navigation; or

(2) 900 m, for flights under all other conditions.

(d) When showing compliance with (a) to (c), the following shall be taken into account:

(1) the mass of the aeroplane at the commencement of the take-off run;

(2) the pressure altitude at the aerodrome;

(3) the ambient temperature at the aerodrome; and

(4) not more than 50 % of the reported headwind component or not less than 150 % of the reported tailwind component.

(e) The requirements in (a)(3), (a)(4), (a)(5), (b)(2) and (c)(2) shall not be applicable to VFR operations by day.

CAT.POL.A.315 En-route — multi-engined aeroplanes

(a) The aeroplane, in the meteorological conditions expected for the flight and in the event of the failure of one engine, with the remaining engines operating within the maximum continuous power conditions specified, shall be capable of continuing flight at or above the relevant minimum altitudes for safe flight stated in the operations manual to a point of 1 000 ft above an aerodrome at which the performance requirements can be met.

(b) It shall be assumed that, at the point of engine failure:

(1) the aeroplane is not flying at an altitude exceeding that at which the rate of climb equals 300 ft per minute with all engines operating within the maximum continuous power conditions specified; and

(2) the en-route gradient with OEI shall be the gross gradient of descent or climb, as appropriate, respectively increased by a gradient of 0.5 %, or decreased by a gradient of 0.5 %.

CAT.POL.A.320 En-route — single-engined aeroplanes

(a) In the meteorological conditions expected for the flight, and in the event of engine failure, the aeroplane shall be capable of reaching a place at which a safe forced landing can be made, unless the operator is approved by the CAAT in accordance with TCAR OPS Part SPA, Subpart L — SINGLE-ENGINED TURBINE AEROPLANE OPERATIONS AT NIGHT OR IN IMC (SET-IMC) and makes use of a risk period.

(b) For the purposes of point (a), it shall be assumed that, at the point of engine failure:

(1) the aeroplane is not flying at an altitude exceeding that at which the rate of climb equals 300 ft per minute, with the engine operating within the maximum continuous power conditions specified; and

(2) the en-route gradient is the gross gradient of descent increased by a gradient of 0.5 %.

CAT.POL.A.325 Landing — destination and alternate aerodromes

The landing mass of the aeroplane determined in accordance with CAT.POL.A.105(a) shall not exceed the maximum landing mass specified for the altitude and the ambient temperature expected at the estimated time of landing at the destination aerodrome and alternate aerodrome.

CAT.POL.A.330 Landing — dry runways

(a) The landing mass of the aeroplane determined in accordance with point CAT.POL.A.105(a) for the estimated time of landing at the destination aerodrome and at any alternate aerodrome shall allow a full- stop landing from 50 ft above the threshold within 70 % of the LDA.

(b) By way of derogation from point (a), and where point CAT.POL.A.355 is complied with, the landing mass of the aeroplane determined in accordance with point CAT.POL.A.105(a) for the estimated time of landing at the destination aerodrome shall be such as to allow a full-stop landing from 50 ft above the threshold within 80 % of the LDA.

(c) When determining the landing mass, the operator shall take the following into account:

(1) the altitude at the aerodrome;

(2) not more than 50 % of the headwind component or not less than 150 % of the tailwind component;

(3) the type of runway surface;

(4) the runway slope in the direction of landing.

(d) For steep approach operations, the operator shall use landing distance data factored in accordance with point (a), based on a screen height of less than 60 ft, but not less than 35 ft, and comply with point CAT.POL.A.345.

(e) For short landing operations, the operator shall use landing distance data factored in accordance with point (a), and comply with point CAT.POL.A.350.

(f) For dispatching the aeroplane, the aeroplane shall either:

(1) land on the most favourable runway, in still air;

(2) land on the runway most likely to be assigned considering the probable wind speed and direction, the ground-handling characteristics of the aeroplane and other conditions such as landing aids and terrain.

(g) If the operator is unable to comply with point (f)(2) for the destination aerodrome, the aeroplane shall only be dispatched if an alternate aerodrome is designated that permits full compliance with points (a) to (f).

CAT.POL.A.335 Landing — wet and contaminated runways

(a) When the appropriate weather reports or forecasts indicate that the runway at the estimated time of arrival may be wet, the LDA shall be one of the following distances:

(1) a landing distance provided in the AFM for use on wet runways at time of dispatch, but not less than that required by point CAT.POL.A.330;

(2) if a landing distance is not provided in the AFM for use on wet runways at time of dispatch, at least 115 % of the required landing distance, determined in accordance with point CAT.POL.A.330(a);

(3) a landing distance shorter than that required by point (a)(2), but not less than that required by point CAT.POL.A.330(a), as applicable, if the runway has specific friction improving characteristics and the AFM includes specific additional information for landing distance on that runway type;

(4) by way of derogation from points (a)(1), (a)(2) and (a)(3), for aeroplanes that are approved for reduced landing distance operations under point CAT.POL.A.355, the landing distance determined in accordance with point CAT.POL.A.355(b)(7)(iii).

(b) When the appropriate weather reports or forecasts indicate that the runway at the estimated time of arrival may be contaminated, the landing distance shall not exceed the LDA. The operator shall specify in the operations manual the landing distance data to be applied.

CAT.POL.A.340 Take-off and landing climb requirements

The operator of a two-engined aeroplane shall fulfil the following take-off and landing climb requirements.

(a) *Take-off climb*

(1) All engines operating

(i) The steady gradient of climb after take-off shall be at least 4 % with:

(A) take-off power on each engine;

(B) the landing gear extended, except that if the landing gear can be retracted in not more than seven seconds, it may be assumed to be retracted;

(C) the wing flaps in the take-off position(s); and

(D) a climb speed not less than the greater of 1.1 V_{MC} (minimum control speed on or near ground) and 1.2 V_{S1} (stall speed or minimum steady flight speed in the landing configuration).

(2) OEI

(i) The steady gradient of climb at an altitude of 400 ft above the take-off surface shall be measurably positive with:

(A) the critical engine inoperative and its propeller in the minimum drag position;

(B) the remaining engine at take-off power;

(C) the landing gear retracted;

(D) the wing flaps in the take-off position(s); and

(E) a climb speed equal to that achieved at 50 ft.

(ii) The steady gradient of climb shall be not less than 0.75 % at an altitude of 1 500 ft above the take-off surface with:

(A) the critical engine inoperative and its propeller in the minimum drag position;

(B) the remaining engine at not more than maximum continuous power;

(C) the landing gear retracted;

(D) the wing flaps retracted; and

(E) a climb speed not less than 1.2 V_{S1}.

(b) *Landing climb*

(1) All engines operating

(i) The steady gradient of climb shall be at least 2.5 % with:

(A) not more than the power or thrust that is available eight seconds after initiation of movement of the power controls from the minimum flight idle position;

(B) the landing gear extended;

(C) the wing flaps in the landing position; and

(D) a climb speed equal to V_{REF} (reference landing speed).

(2) OEI

(i) The steady gradient of climb shall be not less than 0.75 % at an altitude of 1 500 ft above the landing surface with:

(A) the critical engine inoperative and its propeller in the minimum drag position;

(B) the remaining engine at not more than maximum continuous power;

(C) the landing gear retracted;

(D) the wing flaps retracted; and

(E) a climb speed not less than 1.2 V_{S1}.

CAT.POL.A.345 Approval of steep approach operations

(a) Steep approach operations using glideslope angles of 4.5° or more and with screen heights of less than 60 ft, but not less than 35 ft, require prior approval by the CAAT.

(b) To obtain the approval, the operator shall provide evidence that the following conditions are met:

(1) the AFM states the maximum approved glideslope angle, any other limitations, normal, abnormal or emergency procedures for the steep approach as well as amendments to the field length data when using steep approach criteria; and

(2) for each aerodrome at which steep approach operations are to be conducted:

(i) a suitable glide path reference system, comprising at least a visual glide path indicating system, is available;

(ii) weather minima are specified; and

(iii) the following items are taken into consideration:

(A) the obstacle situation;

(B) the type of glide path reference and runway guidance;

(C) the minimum visual reference to be required at DH and MDA;

(D) available airborne equipment;

(E) pilot qualification and special aerodrome familiarisation;

(F) AFM limitations and procedures; and

(G) missed approach criteria.

CAT.POL.A.350 Approval of short landing operations

(a) Short landing operations require prior approval by the CAAT.

(b) To obtain the approval, the operator shall provide evidence that the following conditions are met:

(1) the distance used for the calculation of the permitted landing mass may consist of the usable length of the declared safe area plus the declared LDA;

(2) the use of the declared safe area is approved by the State of the aerodrome;

(3) the declared safe area is clear of obstructions or depressions that would endanger an aeroplane undershooting the runway and no mobile object is permitted on the declared safe area while the runway is being used for short landing operations;

(4) the slope of the declared safe area does not exceed 5 % upward nor 2 % downward slope in the direction of landing;

(5) the usable length of the declared safe area does not exceed 90 m;

(6) the width of the declared safe area is not less than twice the runway width, centred on the extended runway centreline;

(7) the crossing height over the beginning of the usable length of the declared safe area is not less than 50 ft;

(8) weather minima are specified for each runway to be used and are not less than the greater of VFR or NPA minima;

(9) pilot experience, training and special aerodrome familiarisation requirements are specified and met;

(10) additional conditions, if specified by the CAAT, taking into account the aeroplane type characteristics, orographic characteristics in the approach area, available approach aids and missed approach/balked landing considerations.

CAT.POL.A.355 Approval of reduced required landing distance operations

(a) Operations with a landing mass of the aeroplane that allows a full-stop landing within 80 % of the landing distance available (LDA) require prior approval by the CAAT. Such approval shall be obtained for each runway on which operations with reduced required landing distance are conducted.

(b) To obtain the approval referred to in point (a), the operator shall conduct a risk assessment to demonstrate that a level of safety equivalent to that intended by point CAT.POL.A.330(a) is achieved and at least the following conditions are met:

(1) the State of the aerodrome has determined a public interest and operational necessity for the operation, either due to the remoteness of the aerodrome or to physical limitations relating to the extension of the runway;

(2) short landing operations in accordance with point CAT.POL.A.350 and approaches outside stabilised approach criteria approved under point CAT.OP.MPA.115(a) are prohibited;

(3) landing on contaminated runways is prohibited;

(4) a specific control procedure of the touchdown area is defined in the operations manual (OM) and implemented; this procedure shall include adequate go-around and balked-landing instructions when touchdown in the defined area cannot be achieved;

(5) an adequate aerodrome training and checking programme for the flight crew is established;

(6) the flight crew is qualified and has recency in reduced required landing distance operations at the aerodrome concerned;

(7) an aerodrome landing analysis programme (ALAP) is established by the operator to ensure that the following conditions are met:

(i) no tailwind is forecast at the expected time of arrival;

(ii) if the runway is forecast to be wet at the expected time of arrival, the landing distance at dispatch shall either be determined in accordance with point CAT.OP.MPA.303(c), or shall be 115 % of the landing distance determined for dry runways, whichever is longer;

(iii) no forecast contaminated runway conditions exist at the expected time of arrival;

(iv) no forecast adverse weather conditions exist at the expected time of arrival;

(8) operational procedures are established to ensure that:

(i) all the equipment that affects landing performance and landing distance is operative before commencing the flight;

(ii) deceleration devices are correctly used by the flight crew;

(9) specific maintenance instructions and operational procedures are established for the aeroplane's deceleration devices to enhance the reliability of those systems;

(10) the final approach and landing are conducted under visual meteorological conditions (VMC) only;

(11) additional aerodrome conditions, if specified by the competent authority that has certified the aerodrome, taking into account orographic characteristics of the approach area, available approach aids, missed-approach and balked-landing considerations.

CHAPTER 4 Performance class C

CAT.POL.A.400 Take-off

(a) The take-off mass shall not exceed the maximum take-off mass specified in the AFM for the pressure altitude and the ambient temperature at the aerodrome of departure.

(b) For aeroplanes that have take-off field length data contained in their AFM that do not include engine failure accountability, the distance from the start of the take-off roll required by the aeroplane to reach a height of 50 ft above the surface with all engines operating within the maximum take-off power conditions specified, when multiplied by a factor of either:

(1) 1.33 for aeroplanes having two engines;
(2) 1.25 for aeroplanes having three engines; or
(3) 1.18 for aeroplanes having four engines,

shall not exceed the take-off run available (TORA) at the aerodrome at which the take-off is to be made.

(c) For aeroplanes that have take-off field length data contained in their AFM which accounts for engine failure, the following requirements shall be met in accordance with the specifications in the AFM:

(1) the accelerate-stop distance shall not exceed the ASDA;
(2) the take-off distance shall not exceed the take-off distance available (TODA), with a clearway distance not exceeding half of the TORA;
(3) the take-off run shall not exceed the TORA;
(4) a single value of V_1 for the rejected and continued take-off shall be used; and
(5) on a wet or contaminated runway the take-off mass shall not exceed that permitted for a take-off on a dry runway under the same conditions.

(d) The following shall be taken into account:

(1) the pressure altitude at the aerodrome;
(2) the ambient temperature at the aerodrome;
(3) the runway surface condition and the type of runway surface;
(4) the runway slope in the direction of take-off;
(5) not more that 50 % of the reported headwind component or not less than 150 % of the reported tailwind component; and
(6) the loss, if any, of runway length due to alignment of the aeroplane prior to take-off.

CAT.POL.A.405 Take-off obstacle clearance

(a) The take-off flight path with OEI shall be determined such that the aeroplane clears all obstacles by a vertical distance of at least 50 ft plus 0.01 × D, or by a horizontal distance of at least 90 m plus 0.125 × D, where D is the horizontal distance the aeroplane has travelled from the end of the TODA. For aeroplanes with a wingspan of less than 60 m, a horizontal obstacle clearance of half the aeroplane wingspan plus 60 m plus 0.125 × D may be used.

(b) The take-off flight path shall begin at a height of 50 ft above the surface at the end of the take-off distance required by CAT.POL.A.400(b) or (c), as applicable, and end at a height of 1500 ft above the surface.

(c) When showing compliance with (a), the following shall be taken into account:

(1) the mass of the aeroplane at the commencement of the take-off run;

(2) the pressure altitude at the aerodrome;

(3) the ambient temperature at the aerodrome; and

(4) not more than 50 % of the reported headwind component or not less than 150 % of the reported tailwind component.

(d) Track changes shall not be allowed up to that point of the take-off flight path where a height of 50 ft above the surface has been achieved. Thereafter, up to a height of 400 ft it is assumed that the aeroplane is banked by no more than 15°. Above 400 ft height bank angles greater than 15°, but not more than 25°, may be scheduled. Adequate allowance shall be made for the effect of bank angle on operating speeds and flight path, including the distance increments resulting from increased operating speeds.

(e) For cases that do not require track changes of more than 15°, the operator does not need to consider those obstacles that have a lateral distance greater than:

(1) 300 m, if the pilot is able to maintain the required navigational accuracy through the obstacle accountability area; or

(2) 600 m, for flights under all other conditions.

(f) For cases that do require track changes of more than 15°, the operator does not need to consider those obstacles that have a lateral distance greater than:

(1) 600 m, if the pilot is able to maintain the required navigational accuracy through the obstacle accountability area; or

(2) 900 m, for flights under all other conditions.

(g) The operator shall establish contingency procedures to satisfy (a) to (f) and to provide a safe route, avoiding obstacles, to enable the aeroplane to either comply with the en-route requirements of CAT.POL.A.410, or land at either the aerodrome of departure or at a take-off alternate aerodrome.

CAT.POL.A.410 En-route — all engines operating

(a) In the meteorological conditions expected for the flight, at any point on its route or on any planned diversion therefrom, the aeroplane shall be capable of a rate of climb of at least 300 ft per minute with all engines operating within the maximum continuous power conditions specified at:

(1) the minimum altitudes for safe flight on each stage of the route to be flown, or of any planned diversion therefrom, specified in or calculated from the information contained in the operations manual relating to the aeroplane; and

(2) the minimum altitudes necessary for compliance with the conditions prescribed in CAT.POL.A.415 and 420, as appropriate.

CAT.POL.A.415 En-route — OEI

(a) In the meteorological conditions expected for the flight, in the event of any one engine becoming inoperative at any point on its route or on any planned diversion therefrom and with the other engine(s) operating within the maximum continuous power conditions specified, the aeroplane shall be capable of continuing the flight from the cruising altitude to an aerodrome where a landing can be made in accordance with CAT.POL.A.430 or CAT.POL.A.435, as appropriate. The aeroplane shall clear obstacles within 9.3 km (5 NM) either side of the intended track by a vertical interval of at least:

(1) 1 000 ft, when the rate of climb is zero or greater; or

(2) 2 000 ft, when the rate of climb is less than zero.

(b) The flight path shall have a positive slope at an altitude of 450 m (1 500 ft) above the aerodrome where the landing is assumed to be made after the failure of one engine.

(c) The available rate of climb of the aeroplane shall be taken to be 150 ft per minute less than the gross rate of climb specified.

(d) The width margins provided for in point (a) shall be increased to 18.5 km (10 NM) if the navigational accuracy does not meet at least navigation specification RNAV 5.

(e) Fuel jettisoning is permitted to an extent consistent with reaching the aerodrome where the aeroplane is assumed to land after engine failure with the required fuel reserves in accordance with point CAT.OP. MPA.181, appropriate for an alternate aerodrome, if a safe procedure is used.

CAT.POL.A.420 En-route — aeroplanes with three or more engines, two engines inoperative

(a) An aeroplane that has three or more engines shall not be away from an aerodrome at which the requirements of point CAT.POL.A.430 for the expected landing mass are met, at any point along the intended track for more than 90 minutes with all engines operating at cruising power or thrust, as appropriate, at standard temperature in still air, unless points (b) to (e) of this point are complied with.

(b) The two-engines-inoperative flight path shall permit the aeroplane to continue the flight, in the expected meteorological conditions, clearing all obstacles within 9.3 km (5 NM) on either side of the intended track by a vertical interval of at least 2 000 ft, to an aerodrome at which the performance requirements applicable for the expected landing mass are met.

(c) The two engines shall be assumed to fail at the most critical point of that portion of the route where the aeroplane is operated for more than 90 minutes, with all engines operating at cruising power or thrust, as appropriate, at standard temperature in still air, away from the aerodrome referred to in point (a).

(d) The expected mass of the aeroplane at the point where the two engines are assumed to fail shall not be less than that which would include sufficient fuel/energy to proceed to an aerodrome where the landing is assumed to be made, and to arrive there at an altitude of at least 1 500ft (450 m) directly over the landing area, and thereafter, to fly for 15 minutes at cruising power or thrust, as appropriate.

(e) The available rate of climb of the aeroplane shall be 150 ft per minute less than that specified.

(f) The width margins provided for in point (b) shall be increased to 18.5 km (10 NM) if the navigational accuracy does not meet at least navigation specification RNAV 5.

(g) Fuel jettisoning is permitted to an extent consistent with reaching the aerodrome with the required fuel reserves in accordance with point (d), if a safe procedure is used.

CAT.POL.A.425 Landing — destination and alternate aerodromes

The landing mass of the aeroplane determined in accordance with CAT.POL.A.105(a) shall not exceed the maximum landing mass specified in the AFM for the altitude and, if accounted for in the AFM, the ambient temperature expected for the estimated time of landing at the destination aerodrome and alternate aerodrome.

CAT.POL.A.430 Landing — dry runways

(a) The landing mass of the aeroplane determined in accordance with CAT.POL.A.105(a) for the estimated time of landing at the destination aerodrome and any alternate aerodrome shall allow a full stop landing from 50 ft above the threshold within 70 % of the LDA taking into account:

(1) the altitude at the aerodrome;

(2) not more than 50 % of the headwind component or not less than 150 % of the tailwind component;

(3) the type of runway surface; and

(4) the runway slope in the direction of landing.

(b) For dispatching the aeroplane it shall be assumed that:

(1) the aeroplane will land on the most favourable runway in still air; and

(2) the aeroplane will land on the runway most likely to be assigned considering the probable wind speed and direction, the ground handling characteristics of the aeroplane and other conditions such as landing aids and terrain.

(c) If the operator is unable to comply with (b)(2) for the destination aerodrome, the aeroplane shall only be dispatched if an alternate aerodrome is designated that permits full compliance with (a) and (b).

CAT.POL.A.435 Landing — wet and contaminated runways

(a) When the appropriate weather reports or forecasts indicate that the runway at the estimated time of arrival may be wet, the LDA shall be one of the following distances:

(1) a landing distance provided in the AFM for use on wet runways at time of dispatch, but not less than that required by point CAT.POL.A.430;

(2) if a landing distance is not provided in the AFM for use on wet runways at time of dispatch, at least 115 % of the required landing distance, determined in accordance with point CAT.POL.A.430.

(b) When the appropriate weather reports and/or forecasts indicate that the runway at the estimated time of arrival may be contaminated, the landing distance shall not exceed the LDA. The operator shall specify in the operations manual the landing distance data to be applied.

SECTION 2 Helicopters

CHAPTER 1 General requirements

CAT.POL.H.100 Applicability

(a) Helicopters shall be operated in accordance with the applicable performance class requirements.

(b) Helicopters shall be operated in performance class 1:

(1) when operated to/from aerodromes or operating sites located in a congested hostile environment, except when operated to/from a public interest site (PIS) in accordance with CAT.POL.H.225; or

(2) when having an MOPSC of more than 19, except when operated to/from a helideck in performance class 2 under an approval in accordance with CAT.POL.H.305.

(c) Unless otherwise prescribed by (b), helicopters that have an MOPSC of 19 or less but more than nine shall be operated in performance class 1 or 2.

(d) Unless otherwise prescribed by (b), helicopters that have an MOPSC of nine or less shall be operated in performance class 1, 2 or 3.

CAT.POL.H.105 General

(a) The mass of the helicopter:

(1) at the start of the take-off; or

(2) in the event of in-flight replanning, at the point from which the revised operational flight plan applies,

shall not be greater than the mass at which the applicable requirements of this Section can be complied with for the flight to be undertaken, taking into account expected reductions in mass as the flight proceeds and such fuel jettisoning as is provided for in the relevant requirement.

(b) The approved performance data contained in the AFM shall be used to determine compliance with the requirements of this Section, supplemented as necessary with other data as prescribed in the relevant requirement. The operator shall specify such other data in the operations manual. When applying the factors prescribed in this Section, account may be taken of any operational factors already incorporated in the AFM performance data to avoid double application of factors.

(c) When showing compliance with the requirements of this Section, account shall be taken of the following parameters:

(1) mass of the helicopter;

(2) the helicopter configuration;

(3) the environmental conditions, in particular:

(i) pressure altitude and temperature;

(ii) wind:

(A) except as provided in (C), for take-off, take-off flight path and landing requirements, accountability for wind shall be no more than 50 % of any reported steady headwind component of 5 kt or more;

(B) where take-off and landing with a tailwind component is permitted in the AFM, and in all cases for the take-off flight path, not less than 150 % of any reported tailwind component shall be taken into account; and

(C) where precise wind measuring equipment enables accurate measurement of wind velocity over the point of take-off and landing, wind components in excess of 50 % may be established by the operator, provided that the operator demonstrates to the CAAT that the proximity to the FATO and accuracy enhancements of the wind measuring equipment provide an equivalent level of safety;

(4) the operating techniques; and

(5) the operation of any systems that have an adverse effect on performance.

CAT.POL.H.110 Obstacle accountability

(a) For the purpose of obstacle clearance requirements, an obstacle located beyond the FATO, in the take-off flight path, or the missed approach flight path shall be considered if its lateral distance from the nearest point on the surface below the intended flight path is not further than the following:

(1) For operations under VFR:

(i) half of the minimum width defined in the AFM — or, when no width is defined, '0.75 × D', where D is the largest dimension of the helicopter when the rotors are turning;

(ii) plus, the greater of '0.25 × D' or '3 m';

(iii) plus:

(A) 0.10 × distance DR for operations under VFR by day; or

(B) 0.15 × distance DR for operations under VFR at night.

(2) For operations under IFR:

(i) '1.5 D' or 30 m, whichever is greater, plus:

(A) 0.10 × distance DR, for operations under IFR with accurate course guidance;

(B) 0.15 × distance DR, for operations under IFR with standard course guidance; or

(C) 0.30 × distance DR for operations under IFR without course guidance.

(ii) When considering the missed approach flight path, the divergence of the obstacle accountability area only applies after the end of the take-off distance available.

(3) For operations with initial take-off conducted visually and converted to IFR/IMC at a transition point, the criteria required in (1) apply up to the transition point, and the criteria required in (2) apply after the transition point. The transition point cannot be located before the end of the take-off distance required for helicopters (TODRH) operating in performance class 1 or before the defined point after take-off (DPATO) for helicopters operating in performance class 2.

(b) For take-off using a back-up or a lateral transition procedure, for the purpose of obstacle clearance requirements, an obstacle located in the back-up or lateral transition area shall be

considered if its lateral distance from the nearest point on the surface below the intended flight path is not further than:

(1) half of the minimum width defined in the AFM or, when no width is defined, '0.75 × D';

(2) plus the greater of '0.25 × D' or '3 m';

(3) plus:

(i) for operations under VFR by day 0.10 × the distance travelled from the back of the FATO, or

(ii) for operations under VFR at night 0.15 × the distance travelled from the back of the FATO.

(c) Obstacles may be disregarded if they are situated beyond:

(1) 7 × rotor radius (R) for day operations, if it is assured that navigational accuracy can be achieved by reference to suitable visual cues during the climb;

(2) 10 × R for night operations, if it is assured that navigational accuracy can be achieved by reference to suitable visual cues during the climb;

(3) 300 m if navigational accuracy can be achieved by appropriate navigation aids; or

(4) 900 m in all other cases.

CHAPTER 2 Performance class 1

CAT.POL.H.200 General

Helicopters operated in performance class 1 shall be certified in category A or equivalent as determined by the CAAT. (or take out equivalency option completely)

CAT.POL.H.205 Take-off

(a) The take-off mass shall not exceed the maximum take-off mass specified in the AFM for the procedure to be used.

(b) The take-off mass shall be such that:

(1) it is possible to reject the take-off and land on the FATO in case of the critical engine failure being recognised at or before the take-off decision point (TDP);

(2) the rejected take-off distance required (RTODRH) does not exceed the rejected take-off distance available (RTODAH); and

(3) the TODRH does not exceed the take-off distance available (TODAH).

(4) Notwithstanding (b)(3), the TODRH may exceed the TODAH if the helicopter, with the critical engine failure recognised at TDP can, when continuing the take-off, clear all obstacles to the end of the TODRH by a vertical margin of not less than 10.7 m (35 ft).

(c) When showing compliance with (a) and (b), account shall be taken of the appropriate parameters of CAT.POL.H.105(c) at the aerodrome or operating site of departure.

(d) That part of the take-off up to and including TDP shall be conducted in sight of the surface such that a rejected take-off can be carried out.

(e) For take-off using a backup or lateral transition procedure, with the critical engine failure recognition at or before the TDP, all obstacles in the back-up or lateral transition area shall be cleared by an adequate margin.

CAT.POL.H.210 Take-off flight path

(a) From the end of the TODRH with the critical engine failure recognised at the TDP:

(1) The take-off mass shall be such that the take-off flight path provides a vertical clearance, above all obstacles located in the climb path, of not less than 10.7 m (35 ft) for operations under VFR and 10.7 m (35 ft) + 0.01 × distance DR for operations under IFR. Only obstacles as specified in CAT.POL.H.110 have to be considered.

(2) Where a change of direction of more than 15° is made, adequate allowance shall be made for the effect of bank angle on the ability to comply with the obstacle clearance requirements. This turn is not to be initiated before reaching a height of 61 m (200 ft) above the take-off surface unless it is part of an approved procedure in the AFM.

(b) When showing compliance with (a), account shall be taken of the appropriate parameters of CAT.POL.H.105(c) at the aerodrome or operating site of departure.

CAT.POL.H.215 En-route — critical engine inoperative

(a) The mass of the helicopter and flight path at all points along the route, with the critical engine inoperative and the meteorological conditions expected for the flight, shall permit compliance with (1), (2) or (3):

(1) When it is intended that the flight will be conducted at any time out of sight of the surface, the mass of the helicopter permits a rate of climb of at least 50 ft/minute with the critical engine inoperative at an altitude of at least 300 m (1 000 ft), or 600 m (2 000 ft) in areas of mountainous terrain, above all terrain and obstacles along the route within 9.3 km (5 NM) on either side of the intended track.

(2) When it is intended that the flight will be conducted without the surface in sight, the flight path permits the helicopter to continue flight from the cruising altitude to a height of 300 m (1 000 ft) above a landing site where a landing can be made in accordance with CAT.POL.H.220. The flight path clears vertically, by at least 300 m (1 000 ft) or 600 m (2 000 ft) in areas of mountainous terrain, all terrain and obstacles along the route within 9.3 km (5 NM) on either side of the intended track. Drift-down techniques may be used.

(3) When it is intended that the flight will be conducted in VMC with the surface in sight, the flight path permits the helicopter to continue flight from the cruising altitude to a height of 300 m (1 000 ft) above a landing site where a landing can be made in accordance with CAT.POL.H.220, without flying at any time below the appropriate minimum flight altitude. Obstacles within 900 m on either side of the route need to be considered.

(b) When showing compliance with (a)(2) or (a)(3):

(1) the critical engine is assumed to fail at the most critical point along the route;

(2) account is taken of the effects of winds on the flight path;

(3) fuel jettisoning is planned to take place only to an extent consistent with reaching the aerodrome or operating site with the required fuel reserves and using a safe procedure; and

(4) fuel jettisoning is not planned below 1 000 ft above terrain.

(c) The width margins of (a)(1) and (a)(2) shall be increased to 18.5 km (10 NM) if the navigational accuracy cannot be met for 95 % of the total flight time.

CAT.POL.H.220 Landing

(a) The landing mass of the helicopter at the estimated time of landing shall not exceed the maximum mass specified in the AFM for the procedure to be used.

(b) In the event of the critical engine failure being recognised at any point at or before the landing decision point (LDP), it is possible either to land and stop within the FATO, or to perform a balked landing and clear all obstacles in the flight path by a vertical margin of 10.7 m (35 ft). Only obstacles as specified in CAT.POL.H.110 have to be considered.

(c) In the event of the critical engine failure being recognised at any point at or after the LDP, it is possible to:

(1) clear all obstacles in the approach path; and

(2) land and stop within the FATO.

(d) When showing compliance with (a) to (c), account shall be taken of the appropriate parameters of CAT.POL.H.105(c) for the estimated time of landing at the destination aerodrome or operating site, or any alternate if required.

(e) That part of the landing from the LDP to touchdown shall be conducted in sight of the surface.

CAT.POL.H.225 Helicopter operations to/from a public interest site

(a) Operations to/from a public interest site (PIS) may be conducted in performance class 2, without complying with CAT.POL.H.310(b) or CAT.POL.H.325(b), provided that all of the following are complied with:

(1) the PIS was in use before 1 July 2002;

(2) the size of the PIS or obstacle environment does not permit compliance with the requirements for operation in performance class 1;

(3) the operation is conducted with a helicopter with an MOPSC of six or less;

(4) the operator complies with CAT.POL.H.305(b)(2) and (b)(3);

(5) the helicopter mass does not exceed the maximum mass specified in the AFM for a climb gradient of 8 % in still air at the appropriate take-off safety speed (V_{TOSS}) with the critical engine inoperative and the remaining engines operating at an appropriate power rating; and

(6) the operator has obtained prior approval for the operation from the CAAT. Before such operations take place in a foreign country, the operator shall obtain an endorsement from the competent authority of that foreign county.

(b) Site-specific procedures shall be established in the operations manual to minimise the period during which there would be danger to helicopter occupants and persons on the surface in the event of an engine failure during take-off and landing.

(c) The operations manual shall contain for each PIS: a diagram or annotated photograph, showing the main aspects, the dimensions, the non-conformance with the requirements performance class 1, the main hazards and the contingency plan should an incident occur.

CHAPTER 3 Performance class 2

CAT.POL.H.300 General

Helicopters operated in performance class 2 shall be certified in category A.

CAT.POL.H.305 Operations without an assured safe forced landing capability

(a) Operations without an assured safe forced landing capability during the take-off and landing phases shall only be conducted if the operator has been granted an approval by the CAAT

(b) To obtain and maintain such approval the operator shall:

(1) conduct a risk assessment, specifying:

(i) the type of helicopter; and

(ii) the type of operations;

(2) implement the following set of conditions:

(i) attain and maintain the helicopter/engine modification standard defined by the manufacturer;

(ii) conduct the preventive maintenance actions recommended by the helicopter or engine manufacturer;

(iii) include take-off and landing procedures in the operations manual, where they do not already exist in the AFM;

(iv) specify training for flight crew; and

(v) provide a system for reporting to the manufacturer loss of power, engine shutdown or engine failure events;

and

(3) implement a usage monitoring system (UMS).

CAT.POL.H.310 Take-off

(a) The take-off mass shall not exceed the maximum mass specified for a rate of climb of 150 ft/min at 300 m (1 000 ft) above the level of the aerodrome or operating site with the critical engine inoperative and the remaining engine(s) operating at an appropriate power rating.

(b) For operations other than those specified in CAT.POL.H.305, the take-off shall be conducted such that a safe forced landing can be executed until the point where safe continuation of the flight is possible.

(c) For operations in accordance with CAT.POL.H.305, in addition to the requirements of (a):

(1) the take-off mass shall not exceed the maximum mass specified in the AFM for an all engines operative out of ground effect (AEO OGE) hover in still air with all engines operating at an appropriate power rating; or

(2) for operations from a helideck:

(i) with a helicopter that has an MOPSC of more than 19; or

(ii) any helicopter operated from a helideck located in a hostile environment,

the take-off mass shall take into account: the procedure; deck-edge miss and drop down appropriate to the height of the helideck with the critical engine(s) inoperative and the remaining engines operating at an appropriate power rating.

(d) When showing compliance with (a) to (c), account shall be taken of the appropriate parameters of CAT.POL.H.105(c) at the point of departure.

(e) That part of the take-off before the requirement of CAT.POL.H.315 is met shall be conducted in sight of the surface.

CAT.POL.H.315 Take-off flight path

From the defined point after take-off (DPATO) or, as an alternative, no later than 200 ft above the take- off surface, with the critical engine inoperative, the requirements of CAT.POL.H.210(a)(1), (a)(2) and (b) shall be complied with.

CAT.POL.H.320 En-route — critical engine inoperative

The requirement of CAT.POL.H.215 shall be complied with.

CAT.POL.H.325 Landing

(a) The landing mass at the estimated time of landing shall not exceed the maximum mass specified for a rate of climb of 150 ft/min at 300 m (1 000 ft) above the level of the aerodrome or operating site with the critical engine inoperative and the remaining engine(s) operating at an appropriate power rating.

(b) If the critical engine fails at any point in the approach path:

(1) a balked landing can be carried out meeting the requirement of CAT.POL.H.315; or

(2) for operations other than those specified in CAT.POL.H.305, the helicopter can perform a safe forced landing.

(c) For operations in accordance with CAT.POL.H.305, in addition to the requirements of (a):

(1) the landing mass shall not exceed the maximum mass specified in the AFM for an AEO OGE hover in still air with all engines operating at an appropriate power rating; or

(2) for operations to a helideck:

(i) with a helicopter that has an MOPSC of more than 19; or

(ii) any helicopter operated to a helideck located in a hostile environment,

the landing mass shall take into account the procedure and drop down appropriate to the height of the helideck with the critical engine inoperative and the remaining engine(s) operating at an appropriate power rating.

(d) When showing compliance with (a) to (c), account shall be taken of the appropriate parameters of CAT.POL.H.105(c) at the destination aerodrome or any alternate, if required.

(e) That part of the landing after which the requirement of (b)(1) cannot be met shall be conducted in sight of the surface.

CHAPTER 4 Performance class 3

CAT.POL.H.400 General

(a) Helicopters operated in performance class 3 shall be certified in category A or equivalent as determined by the CAAT, or category B.

(b) Operations shall only be conducted in a non-hostile environment, except:

(1) when operating in accordance with CAT.POL.H.420; or

(2) for the take-off and landing phase, when operating in accordance with (c).

(c) Provided the operator is approved in accordance with CAT.POL.H.305, operations may be conducted to/from an aerodrome or operating site located outside a congested hostile environment without an assured safe forced landing capability:

(1) during take-off, before reaching V_Y (speed for best rate of climb) or 200 ft above the take-off surface; or

(2) during landing, below 200 ft above the landing surface.

(d) Operations shall not be conducted:

(1) out of sight of the surface;

(2) at night;

(3) when the ceiling is less than 600 ft; or

(4) when the visibility is less than 800 m.

CAT.POL.H.405 Take-off

(a) The take-off mass shall be the lower of:

(1) the MCTOM; or

(2) the maximum take-off mass specified for a hover in ground effect with all engines operating at take-off power, or if conditions are such that a hover in ground effect is not likely to be established, the take-off mass specified for a hover out of ground effect with all engines operating at take-off power.

(b) Except as provided in CAT.POL.H.400(b), in the event of an engine failure the helicopter shall be able to perform a safe forced landing.

CAT.POL.H.410 En-route

(a) The helicopter shall be able, with all engines operating within the maximum continuous power conditions, to continue along its intended route or to a planned diversion without flying at any point below the appropriate minimum flight altitude.

(b) Except as provided in CAT.POL.H.420, in the event of an engine failure the helicopter shall be able to perform a safe forced landing.

CAT.POL.H.415 Landing

(a) The landing mass of the helicopter at the estimated time of landing shall be the lower of:

(1) the maximum certified landing mass; or

(2) the maximum landing mass specified for a hover in ground effect, with all engines operating at take-off power, or if conditions are such that a hover in ground effect is not

likely to be established, the landing mass for a hover out of ground effect with all engines operating at take-off power.

(b) Except as provided in CAT.POL.H.400(b), in the event of an engine failure, the helicopter shall be able to perform a safe forced landing.

CAT.POL.H.420 Helicopter operations over a hostile environment located outside a congested area

(a) Operations over a non-congested hostile environment without a safe forced landing capability with turbine-powered helicopters with an MOPSC of six or less shall only be conducted if the operator has been granted an approval by the CAAT, following a safety risk assessment performed by the operator. Before such operations take place in another Member State, the operator shall obtain an endorsement from the CAAT of that State.

(b) To obtain and maintain such approval the operator shall:

(1) only conduct these operations in the areas and under the conditions specified in the approval;

(2) not conduct these operations under a HEMS approval;

(3) substantiate that helicopter limitations, or other justifiable considerations, preclude the use of the appropriate performance criteria; and

(4) be approved in accordance with CAT.POL.H.305(b).

(c) Notwithstanding CAT.IDE.H.240, such operations may be conducted without supplemental oxygen equipment, provided the cabin altitude does not exceed 10 000 ft for a period in excess of 30 minutes and never exceeds 13 000 ft pressure altitude.

SECTION 3 Mass and balance

CHAPTER 1 Motor-powered aircraft

CAT.POL.MAB.100 Mass and balance, loading

(a) During any phase of operation, the loading, mass and centre of gravity (CG) of the aircraft shall comply with the limitations specified in the AFM, or the operations manual if more restrictive.

(b) The operator shall establish the mass and the CG of any aircraft by actual weighing prior to initial entry into service and thereafter at intervals specified in accordance with the CAAT Notification on Rules, Procedures, and Periodic Determination of Mass B.E. 2566. The accumulated effects of modifications and repairs on the mass and balance shall be accounted for and properly documented. Aircraft shall be reweighed if the effect of modifications on the mass and balance is not accurately known.

(c) The weighing shall be accomplished by the manufacturer of the aircraft or by an approved maintenance organisation.

(d) The operator shall determine the mass of all operating items and crew members included in the aircraft dry operating mass by weighing or by using standard masses. The influence of their position on the aircraft's CG shall be determined.

(e) The operator shall establish the mass of the traffic load, including any ballast, by actual weighing or by determining the mass of the traffic load in accordance with standard passenger and baggage masses.

(f) In addition to standard masses for passengers and checked baggage, the operator can use standard masses for other load items, if it demonstrates to the CAAT that these items have the same mass or that their masses are within specified tolerances.

(g) The operator shall determine the mass of the fuel load by using the actual density or, if not known, the density calculated in accordance with a method specified in the operations manual.

(h) The operator shall ensure that the loading of:

(1) its aircraft is performed under the supervision of qualified personnel; and

(2) traffic load is consistent with the data used for the calculation of the aircraft mass and balance.

(i) The operator shall comply with additional structural limits such as the floor strength limitations, the maximum load per running metre, the maximum mass per cargo compartment and the maximum seating limit. For helicopters, in addition, the operator shall take account of in-flight changes in loading.

(j) The operator shall specify, in the operations manual, the principles and methods involved in the loading and in the mass and balance system that meet the requirements contained in (a) to (i). This system shall cover all types of intended operations.

CAT.POL.MAB.105 Mass and balance data and documentation

(a) The operator shall establish mass and balance data and produce mass and balance documentation prior to each flight specifying the load and its distribution. The mass and balance documentation shall enable the commander to determine that the load and its distribution is such that the mass and balance limits of the aircraft are not exceeded. The mass and balance documentation shall contain the following information:

(1) Aircraft registration and type;
(2) Flight identification, number and date;
(3) Name of the commander;
(4) Name of the person who prepared the document;
(5) Dry operating mass and the corresponding CG of the aircraft:

(i) for performance class B aeroplanes and for helicopters the CG position may not need to be on the mass and balance documentation if, for example, the load distribution is in accordance with a pre-calculated balance table or if it can be shown that for the planned operations a correct balance can be ensured, whatever the real load is;

(6) Mass of the fuel at take-off and the mass of trip fuel;
(7) Mass of consumables other than fuel, if applicable;
(8) Load components including passengers, baggage, freight and ballast;
(9) Take-off mass, landing mass and zero fuel mass;
(10) Applicable aircraft CG positions; and
(11) The limiting mass and CG values.

The information above shall be available in flight planning documents or mass and balance systems. Some of this information may be contained in other documents readily available for use.

(b) Where mass and balance data and documentation is generated by a computerised mass and balance system, the operator shall

(1) verify the integrity of the output data to ensure that the data are within AFM limitations; and
(2) specify the instructions and procedures for the operations manual

(c) The person supervising the loading of the aircraft shall confirm by hand signature or equivalent that the load and its distribution are in accordance with the mass and balance documentation given to the commander. The commander shall indicate his/her acceptance by hand signature or equivalent.

(d) The operator shall specify procedures for last minute changes to the load to ensure that:

(1) any last minute change after the completion of the mass and balance documentation is brought to the attention of the commander and entered in the flight planning documents containing the mass and balance documentation;
(2) the maximum last minute change allowed in passenger numbers or hold load is specified; and
(3) new mass and balance documentation is prepared if this maximum number is exceeded.

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SUBPART D: INSTRUMENTS, DATA, EQUIPMENT

SECTION 1 Aeroplanes

CAT.IDE.A.100 Instruments and equipment — general

(a) Instruments and equipment required by this Subpart shall be approved in accordance with the applicable airworthiness requirements except for the following items:

(1) Spare fuses;
(2) Independent portable lights;
(3) An accurate time piece;
(4) Chart holder;
(5) First-aid kits;
(6) Emergency medical kit;
(7) Megaphones;
(8) Survival and signalling equipment;
(9) Sea anchors and equipment for mooring; and
(10) Child restraint devices.

(b) Instruments and equipment not required under this Part as well as any other equipment which is not required under TCAR OPS, but carried on a flight, shall comply with the following requirements:

(1) the information provided by these instruments, equipment or accessories shall not be used by the flight crew to comply with the requirements of the Air Navigation Act B.E 2497, Kingdom of Thailand Civil Aviation Regulations or CAT.IDE.A.330, CAT.IDE.A.335, CAT.IDE.A.340 and CAT.IDE.A.345; and
(2) the instruments and equipment shall not affect the airworthiness of the aeroplane, even in the case of failures or malfunction.

(c) If equipment is to be used by one flight crew member at his/her station during flight, it shall be readily operable from that station. When a single item of equipment is required to be operated by more than one flight crew member it shall be installed so that the equipment is readily operable from any station at which the equipment is required to be operated.

(d) Those instruments that are used by any flight crew member shall be so arranged as to permit the flight crew member to see the indications readily from his/her station, with the minimum practicable deviation from the position and line of vision that he/she normally assumes when looking forward along the flight path.

(e) All required emergency equipment shall be easily accessible for immediate use.

CAT.IDE.A.105 Minimum equipment for flight

A flight shall not be commenced when any of the aeroplane's instruments, items of equipment or functions required for the intended flight are inoperative or missing, unless:

(a) the aeroplane is operated in accordance with the operator's MEL; or

(b) the operator is approved by the CAAT to operate the aeroplane within the constraints of the master minimum equipment list (MMEL) in accordance with point ORO.MLR.105(j).

CAT.IDE.A.110 Spare electrical fuses

(a) Aeroplanes shall be equipped with spare electrical fuses, of the ratings required for complete circuit protection, for replacement of those fuses that are allowed to be replaced in flight.

(b) The number of spare fuses that are required to be carried shall be the higher of:

(1) 10 % of the number of fuses of each rating; or

(2) three fuses for each rating.

CAT.IDE.A.115 Operating lights

(a) Aeroplanes operated by day shall be equipped with:

(1) an anti-collision light system;

(2) lighting supplied from the aeroplane's electrical system to provide adequate illumination for all instruments and equipment essential to the safe operation of the aeroplane;

(3) lighting supplied from the aeroplane's electrical system to provide illumination in all passenger compartments; and

(4) an independent portable light for each required crew member readily accessible to crew members when seated at their designated stations.

(b) Aeroplanes operated at night shall in addition be equipped with:

(1) navigation/position lights;

(2) two landing lights or a single light having two separately energised filaments; and

(3) lights to conform with the International Regulations for Preventing Collisions at Sea if the aeroplane is operated as a seaplane.

CAT.IDE.A.120 Equipment to clear windshield

Aeroplanes with an MCTOM of more than 5 700 kg shall be equipped at each pilot station with a means to maintain a clear portion of the windshield during precipitation.

CAT.IDE.A.125 Operations under VFR by day — flight and navigational instruments and associated equipment

(a) Aeroplanes operated under VFR by day shall be equipped with the following equipment, available at the pilot's station:

(1) A means of measuring and displaying:

(i) Magnetic heading;

(ii) Time in hours, minutes, and seconds;

(iii) Barometric altitude;

(iv) Indicated airspeed;

(v) Vertical speed;

(vi) Turn and slip;

(vii) Attitude;

(viii) Heading;

(ix) Outside air temperature; and

(x) Mach number whenever speed limitations are expressed in terms of Mach number.

(2) A means of indicating when the supply of power to the required flight instruments is not adequate.

(b) Whenever two pilots are required for the operation, an additional separate means of displaying the following shall be available for the second pilot:

(1) Pressure altitude;
(2) Indicated airspeed;
(3) Vertical speed;
(4) Turn and slip;
(5) Attitude; and
(6) Heading.

(c) A means for preventing malfunction of the airspeed indicating systems due to condensation or icing shall be available for:

(1) aeroplanes with an MCTOM of more than 5 700 kg or an MOPSC of more than nine; and
(2) aeroplanes first issued with an individual CofA on or after 1 April 1999.

(d) Single engine aeroplanes first issued with an individual CofA before 22 May 1995 are exempted from the requirements of (a)(1)(vi), (a)(1)(vii), (a)(1)(viii) and (a)(1)(ix) if the compliance would require retrofitting.

CAT.IDE.A.130 Operations under IFR or at night — flight and navigational instruments and associated equipment

Aeroplanes operated under VFR at night or under IFR shall be equipped with the following equipment, available at the pilot's station:

(a) A means of measuring and displaying:

(1) Magnetic heading;
(2) Time in hours, minutes and seconds;
(3) Indicated airspeed;
(4) Vertical speed;
(5) Turn and slip, or in the case of aeroplanes equipped with a standby means of measuring and displaying attitude, slip;
(6) Attitude;
(7) Stabilised heading;

(8) Outside air temperature; and

(9) Mach number whenever speed limitations are expressed in terms of Mach number.

(b) Two means of measuring and displaying barometric altitude.

(c) A means of indicating when the supply of power to the required flight instruments is not adequate.

(d) A means for preventing malfunction of the airspeed indicating systems required in (a)(3) and (h)(2) due to condensation or icing.

(e) A means of annunciating to the flight crew the failure of the means required in (d) for aeroplanes:

(1) issued with an individual CofA on or after 1 April 1998; or

(2) issued with an individual CofA before 1 April 1998 with an MCTOM of more than 5 700 kg, and with an MOPSC of more than nine.

(f) Except for propeller-driven aeroplanes with an MCTOM of 5 700 kg or less, two independent static pressure systems.

(g) One static pressure system and one alternate source of static pressure for propeller-driven aeroplanes with an MCTOM of 5 700 kg or less.

(h) Whenever two pilots are required for the operation, a separate means of displaying for the second pilot:

(1) Barometric altitude;

(2) Indicated airspeed;

(3) Vertical speed;

(4) Turn and slip;

(5) Attitude; and

(6) Stabilised heading.

(i) A standby means of measuring and displaying attitude capable of being used from either pilot's station for aeroplanes with an MCTOM of more than 5 700 kg or an MOPSC of more than nine that:

(1) is powered continuously during normal operation and, after a total failure of the normal electrical generating system, is powered from a source independent from the normal electrical generating system;

(2) provides reliable operation for a minimum of 30 minutes after total failure of the normal electrical generating system, taking into account other loads on the emergency power supply and operational procedures;

(3) operates independently of any other means of measuring and displaying attitude;

(4) is operative automatically after total failure of the normal electrical generating system;

(5) is appropriately illuminated during all phases of operation, except for aeroplanes with an MCTOM of 5 700 kg or less, already registered in a Member State on 1 April 1995 and equipped with a standby attitude indicator in the left-hand instrument panel;

(6) is clearly evident to the flight crew when the standby attitude indicator is being operated by emergency power; and

(7) where the standby attitude indicator has its own dedicated power supply, has an associated indication, either on the instrument or on the instrument panel, when this supply is in use.

(j) A chart holder in an easily readable position that can be illuminated for night operations.

CAT.IDE.A.135 Additional equipment for single-pilot operation under IFR

Aeroplanes operated under IFR with a single-pilot shall be equipped with an autopilot with at least altitude hold and heading mode.

CAT.IDE.A.140 Altitude alerting system

(a) The following aeroplanes shall be equipped with an altitude alerting system:

(1) turbine propeller powered aeroplanes with an MCTOM of more than 5 700 kg or having an MOPSC of more than nine; and

(2) aeroplanes powered by turbo-jet engines.

(b) The altitude alerting system shall be capable of:

(1) alerting the flight crew when approaching a preselected altitude; and

(2) alerting the flight crew by at least an aural signal, when deviating from a preselected altitude.

(c) Notwithstanding (a), aeroplanes with an MCTOM of 5 700 kg or less, having an MOPSC of more than nine, first issued with an individual CofA before 1 April 1972 and already registered in the Kingdom of Thailand on 1 April 1995 are exempted from being equipped with an altitude alerting system.

CAT.IDE.A.150 Terrain awareness warning system (TAWS)

(a) Turbine-powered aeroplanes having an MCTOM of more than 5 700 kg or an MOPSC of more than nine shall be equipped with a TAWS that meets the requirements for Class A equipment as specified in an acceptable standard.

(b) Reciprocating-engine-powered aeroplanes with an MCTOM of more than 5 700 kg or an MOPSC of more than nine shall be equipped with a TAWS that meets the requirement for Class B equipment as specified in an acceptable standard.

(c) Turbine-powered aeroplanes for which the individual certificate of airworthiness (CofA) was first issued after 1 January 2026and having an MCTOM of 5 700 kg or less and an MOPSC of six to nine shall be equipped with a TAWS that meets the requirements for Class B equipment, as specified in an acceptable standard.

CAT.IDE.A.151 Runway overrun awareness and alerting system (ROAAS)

All turbine-engined aeroplanes of a maximum certificated take-off mass in excess of 5 700 kg, for which the individual certificate of airworthiness is first issued on or after 1 January 2026, shall be equipped with a runway overrun awareness and alerting system (ROAAS).

CAT.IDE.A.155 Airborne collision avoidance system (ACAS)

Turbine-powered aeroplanes with an MCTOM of more than 5 700 kg or an MOPSC of more than 19 shall be equipped with ACAS II.

CAT.IDE.A.160 Airborne weather detecting equipment

The following shall be equipped with airborne weather detecting equipment when operated at night or in IMC in areas where thunderstorms or other potentially hazardous weather conditions, regarded as detectable with airborne weather detecting equipment, may be expected to exist along the route:

(a) pressurised aeroplanes;

(b) non-pressurised aeroplanes with an MCTOM of more than 5 700 kg; and

(c) non-pressurised aeroplanes with an MOPSC of more than nine.

CAT.IDE.A.165 Additional equipment for operations in icing conditions at night

(a) Aeroplanes operated in expected or actual icing conditions at night shall be equipped with a means to illuminate or detect the formation of ice.

(b) The means to illuminate the formation of ice shall not cause glare or reflection that would handicap crew members in the performance of their duties.

CAT.IDE.A.170 Flight crew interphone system

Aeroplanes operated by more than one flight crew member shall be equipped with a flight crew interphone system, including headsets and microphones for use by all flight crew members.

CAT.IDE.A.175 Crew member interphone system

Aeroplanes with an MCTOM of more than 15 000 kg, or with an MOPSC of more than 19 shall be equipped with a crew member interphone system, except for aeroplanes first issued with an individual CofA before 1 April 1965 and already registered in a Member State on 1 April 1995.

CAT.IDE.A.180 Public address system

Aeroplanes with an MOPSC of more than 19 shall be equipped with a public address system.

CAT.IDE.A.185 Cockpit voice recorder

(a) The following aeroplanes shall be equipped with a cockpit voice recorder (CVR):

(1) aeroplanes with an MCTOM of more than 5 700 kg; and

(2) multi-engined turbine-powered aeroplanes with an MCTOM of 5 700 kg or less, with an MOPSC of more than nine and first issued with an individual CofA on or after 1 January 1990.

(b) Until 31 December 2018, the CVR shall be capable of retaining the data recorded during at least:

(1) the preceding 2 hours in the case of aeroplanes referred to in (a)(1) when the individual CofA has been issued on or after 1 April 1998;

(2) the preceding 30 minutes for aeroplanes referred to in (a)(1) when the individual CofA has been issued before 1 April 1998; or

(3) the preceding 30 minutes, in the case of aeroplanes referred to in (a)(2).

(c) By 1 January 2019 at the latest, the CVR shall be capable of retaining the data recorded during at least:

(1) the preceding 25 hours for aeroplanes with an MCTOM of more than 27 000 kg and first issued with an individual CofA on or after 1 January 2022 or

(2) the preceding 2 hours in all other cases.

(d) By 1 January 2019 at the latest, the CVR shall record on means other than magnetic tape or magnetic wire.

(e) The CVR shall record with reference to a timescale:

(1) voice communications transmitted from or received in the flight crew compartment by radio;

(2) flight crew members' voice communications using the interphone system and the public address system, if installed;

(3) the aural environment of the flight crew compartment, including without interruption:

(i) for aeroplanes first issued with an individual CofA on or after 1 April 1998, the audio signals received from each boom and mask microphone in use;

(ii) for aeroplanes referred to in (a)(2) and first issued with an individual CofA before 1 April 1998, the audio signals received from each boom and mask microphone, where practicable;

(4) voice or audio signals identifying navigation or approach aids introduced into a headset or speaker.

(f) The CVR shall start to record prior to the aeroplane moving under its own power and shall continue to record until the termination of the flight when the aeroplane is no longer capable of moving under its own power. In addition, in the case of aeroplanes issued with an individual CofA on or after 1 April 1998, the CVR shall start automatically to record prior to the aeroplane moving under its own power and continue to record until the termination of the flight when the aeroplane is no longer capable of moving under its own power.

(g) In addition to (f), depending on the availability of electrical power, the CVR shall start to record as early as possible during the cockpit checks prior to engine start at the beginning of the flight until the cockpit checks immediately following engine shutdown at the end of the flight, in the case of:

(1) aeroplanes referred to in (a)(1) and issued with an individual CofA on or after 1 April 1998; or

(2) aeroplanes referred to in (a)(2).

(h) If the CVR is not deployable, it shall have a device to assist in locating it under water. By 16 June 2018 at the latest, this device shall have a minimum underwater transmission time of 90 days. If the CVR is deployable, it shall have an automatic emergency locator transmitter.

(i) Aeroplanes with an MCTOM of over 27 000 kg and first issued with an individual CofA on or after 5 September 2022 shall be equipped with an alternate power source to which the CVR and the cockpit- mounted area microphone are switched automatically in the event that all other power to the CVR is interrupted.

CAT.IDE.A.190 Flight data recorder

(a) The following aeroplanes shall be equipped with a flight data recorder (FDR) that uses a digital method of recording and storing data and for which a method of readily retrieving that data from the storage medium is available:

(1) aeroplanes with an MCTOM of more than 5 700 kg and first issued with an individual CofA on or after 1 June 1990;

(2) turbine-engined aeroplanes with an MCTOM of more than 5 700 kg and first issued with an individual CofA before 1 June 1990; and

(3) multi-engined turbine-powered aeroplanes with an MCTOM of 5 700 kg or less, with an MOPSC of more than nine and first issued with an individual CofA on or after 1 April 1998.

(b) The FDR shall record:

(1) time, altitude, airspeed, normal acceleration and heading and be capable of retaining the data recorded during at least the preceding 25 hours for aeroplanes referred to in (a)(2) with an MCTOM of less than 27 000 kg;

(2) the parameters required to determine accurately the aeroplane flight path, speed, attitude, engine power and configuration of lift and drag devices and be capable of retaining the data recorded during at least the preceding 25 hours, for aeroplanes referred to in (a)(1) with an MCTOM of less than 27 000 kg and first issued with an individual CofA before 1 January 2016;

(3) the parameters required to determine accurately the aeroplane flight path, speed, attitude, engine power, configuration and operation and be capable of retaining the data recorded during at least the preceding 25 hours, for aeroplanes referred to in (a)(1) and (a)(2) with an MCTOM of over 27 000 kg and first issued with an individual CofA before 1 January 2016;

(4) the parameters required to determine accurately the aeroplane flight path, speed, attitude, engine power and configuration of lift and drag devices and be capable of retaining the data recorded during at least the preceding 10 hours, in the case of aeroplanes referred to in (a)(3) and first issued with an individual CofA before 1 January 2016; or

(5) the parameters required to determine accurately the aeroplane flight path, speed, attitude, engine power, configuration and operation and be capable of retaining the data recorded during at least the preceding 25 hours, for aeroplanes referred to in (a)(1) and (a)(3) and first issued with an individual CofA on or after 1 January 2016.

(c) Data shall be obtained from aeroplane sources that enable accurate correlation with information displayed to the flight crew.

(d) The FDR shall start to record the data prior to the aeroplane being capable of moving under its own power and shall stop after the aeroplane is incapable of moving under its own power. In addition, in the case of aeroplanes issued with an individual CofA on or after 1 April 1998, the FDR shall start automatically to record the data prior to the aeroplane being capable of moving under its own power and shall stop automatically after the aeroplane is incapable of moving under its own power.

(e) If the FDR is not deployable, it shall have a device to assist in locating it under water. By 16 June 2018 at the latest, this device shall have a minimum underwater transmission time of 90 days. If the FDR is deployable, it shall have an automatic emergency locator transmitter.

CAT.IDE.A.191 Lightweight flight recorder

(a) Turbine-engined aeroplanes with an MCTOM of 2 250 kg or more and aeroplanes with an MOPSC of more than 9 shall be equipped with a flight recorder if all of the following conditions are met:

(1) they are not within the scope of point CAT.IDE.A.190(a);

(2) they are first issued with an individual CofA on or after 5 September 2022.

(b) The flight recorder shall record, by means of flight data or images, information that is sufficient to determine the flight path and aircraft speed.

(c) The flight recorder shall be capable of retaining the flight data and the images recorded during at least the preceding 5 hours.

(d) The flight recorder shall automatically start to record prior to the aeroplane being capable of moving under its own power and shall stop automatically after the aeroplane is no longer capable of moving under its own power.

(e) If the flight recorder records images or audio of the flight crew compartment, then a function shall be provided which can be operated by the commander and which modifies image and audio recordings made before the operation of that function, so that those recordings cannot be retrieved using normal replay or copying techniques.

CAT.IDE.A.195 Data link recording

(a) Aeroplanes first issued with an individual CofA on or after 8 April 2014 that have the capability to operate data link communications and are required to be equipped with a CVR, shall record on a recorder, where applicable:

(1) data link communication messages related to ATS communications to and from the aeroplane, including messages applying to the following applications:

(i) data link initiation;

(ii) controller-pilot communication;

(iii) addressed surveillance;

(iv) flight information;

(v) as far as is practicable, given the architecture of the system, aircraft broadcast surveillance;

(vi) as far as is practicable, given the architecture of the system, aircraft operational control data; and

(vii) as far as is practicable, given the architecture of the system, graphics;

(2) information that enables correlation to any associated records related to data link communications and stored separately from the aeroplane; and

(3) information on the time and priority of data link communications messages, taking into account the system's architecture.

(b) The recorder shall use a digital method of recording and storing data and information and a method for retrieving that data. The recording method shall allow the data to match the data recorded on the ground.

(c) The recorder shall be capable of retaining data recorded for at least the same duration as set out for CVRs in CAT.IDE.A.185.

(d) If the recorder is not deployable, it shall have a device to assist in locating it under water. By 16 June 2018 at the latest, this device shall have a minimum underwater transmission time of 90 days. If the recorder is deployable, it shall have an automatic emergency locator transmitter.

(e) The requirements applicable to the start and stop logic of the data link recorder are the same as the requirements applicable to the start and stop logic of the cockpit voice recorder (CVR) that are contained in point CAT.IDE.A.185.

CAT.IDE.A.200 Combination recorder

Compliance with CVR and FDR requirements may be achieved by:

(a) one flight data and cockpit voice combination recorder in the case of aeroplanes required to be equipped with a CVR or an FDR;

(b) one flight data and cockpit voice combination recorder in the case of aeroplanes with an MCTOM of 5 700 kg or less and required to be equipped with a CVR and an FDR; or

(c) two flight data and cockpit voice combination recorders in the case of aeroplanes with an MCTOM of more than 5 700 kg and required to be equipped with a CVR and an FDR.

CAT.IDE.A.205 Seats, seat safety belts, restraint systems and child restraint devices

(a) Aeroplanes shall be equipped with:

(1) a seat or berth for each person on board who is aged 24 months or more;

(2) a seat belt on each passenger seat and restraining belts for each berth except as specified in (3);

(3) a seat belt with upper torso restraint system on each passenger seat and restraining belts on each berth in the case of aeroplanes with an MCTOM of 5700 kg or less and with an MOPSC of nine or less, having an individual CofA first issued on or after 8 April 2015;

(4) a child restraint device (CRD) for each person on board younger than 24 months;

(5) a seat belt with upper torso restraint system incorporating a device that will automatically restrain the occupant's torso in the event of rapid deceleration:

(i) on each flight crew seat and on any seat alongside a pilot's seat;

(ii) on each observer seat located in the flight crew compartment;

(6) a seat belt with upper torso restraint system on each seat for the minimum required cabin crew.

(b) A seat belt with upper torso restraint system shall have:

(1) a single point release;

(2) on the seats for the minimum required cabin crew, two shoulder straps and a seat belt that may be used independently; and

(3) on flight crew members' seats and on any seat alongside a pilot's seat either of the following:

(i) two shoulder straps and a seat belt that may be used independently; or

(ii) a diagonal shoulder strap and a seat belt that may be used independently for the following aeroplanes:

(A) aeroplanes with an MCTOM of 5 700 kg or less and with an MOPSC of nine or less that are compliant with the emergency landing dynamic conditions defined in the applicable certification specification;

(B) aeroplanes with an MCTOM of 5 700 kg or less and with an MOPSC of nine or less that are not compliant with the emergency landing dynamic conditions defined in the applicable certification specification and having an individual CofA first issued before 28 October 2014; and

(C) aeroplanes certified in accordance with EASA CS-VLA or equivalent and EASA CS-LSA or equivalent.

CAT.IDE.A.210 Fasten seat belt and no smoking signs

Aeroplanes in which not all passenger seats are visible from the flight crew seat(s) shall be equipped with a means of indicating to all passengers and cabin crew when seat belts shall be fastened and when smoking is not allowed.

CAT.IDE.A.215 Internal doors and curtains

Aeroplanes shall be equipped with:

(a) in the case of aeroplanes with an MOPSC of more than 19, a door between the passenger compartment and the flight crew compartment, with a placard indicating 'crew only' and a locking means to prevent passengers from opening it without the permission of a member of the flight crew;

(b) a readily accessible means for opening each door that separates a passenger compartment from another compartment that has emergency exits;

(c) a means for securing in the open position any doorway or curtain separating the passenger compartment from other areas that need to be accessed to reach any required emergency exit from any passenger seat;

(d) a placard on each internal door or adjacent to a curtain that is the means of access to a passenger emergency exit, to indicate that it shall be secured open during take-off and landing; and

(e) a means for any member of the crew to unlock any door that is normally accessible to passengers and that can be locked by passengers.

CAT.IDE.A.220 First-aid kit

(a) Aeroplanes shall be equipped with first-aid kits, in accordance with Table 1.

Table 1

Number of first-aid kits required

Number of passenger seats installed	Number of first-aid kits required
0-100	1
101-200	2
201-300	3
301-400	4
401-500	5
501 or more	6

(b) First-aid kits shall be:

(1) readily accessible for use; and

(2) kept up to date.

CAT.IDE.A.225 Emergency medical kit

(a) Aeroplanes with an MOPSC of more than 30 shall be equipped with an emergency medical kit when any point on the planned route is more than 60 minutes flying time at normal cruising speed from an aerodrome at which qualified medical assistance could be expected to be available.

(b) The commander shall ensure that drugs are only administered by appropriately qualified persons.

(c) The emergency medical kit referred to in (a) shall be:

(1) dust and moisture proof;

(2) carried in a way that prevents unauthorised access; and

(3) kept up to date.

CAT.IDE.A.230 First-aid oxygen

(a) Pressurised aeroplanes operated at pressure altitudes above 25 000 ft, in the case of operations for which a cabin crew member is required, shall be equipped with a supply of undiluted oxygen for passengers who, for physiological reasons, might require oxygen following a cabin depressurisation.

(b) The oxygen supply referred to in (a) shall be sufficient for the remainder of the flight after cabin depressurisation when the cabin altitude exceeds 8 000 ft but does not exceed 15 000 ft, for at least 2 % of the passengers carried, but in no case for less than one person.

(c) There shall be a sufficient number of dispensing units, but in no case less than two, with a means for cabin crew to use the supply.

(d) The first-aid oxygen equipment shall be capable of generating a mass flow to each person.

CAT.IDE.A.235 Supplemental oxygen — pressurised aeroplanes

(a) Pressurised aeroplanes operated at pressure altitudes above 10 000 ft shall be equipped with supplemental oxygen equipment that is capable of storing and dispensing the oxygen supplies in accordance with Table 1.

(b) Pressurised aeroplanes operated at pressure altitudes above 25 000 ft shall be equipped with:

(1) quick donning types of masks for flight crew members;

(2) sufficient spare outlets and masks or portable oxygen units with masks distributed evenly throughout the passenger compartment, to ensure immediate availability of oxygen for use by each required cabin crew member;

(3) an oxygen dispensing unit connected to oxygen supply terminals immediately available to each cabin crew member, additional crew member and occupants of passenger seats, wherever seated; and

(4) a device to provide a warning indication to the flight crew of any loss of pressurisation.

(c) In the case of pressurised aeroplanes first issued with an individual CofA after 8 November 1998 and operated at pressure altitudes above 25 000 ft, or operated at pressure altitudes at, or below 25 000 ft under conditions that would not allow them to descend safely to 13 000 ft within four minutes, the individual oxygen dispensing units referred to in (b)(3) shall be automatically deployable.

(d) The total number of dispensing units and outlets referred to in (b)(3) and (c) shall exceed the number of seats by at least 10 %. The extra units shall be evenly distributed throughout the passenger compartment.

(e) Notwithstanding (a), the oxygen supply requirements for cabin crew member(s), additional crew member(s) and passenger(s), in the case of aeroplanes not certified to fly at altitudes above 25 000 ft, may be reduced to the entire flying time between 10 000 ft and 13 000 ft cabin pressure altitudes for all required cabin crew members and for at least 10 % of the passengers if, at all points along the route to be flown, the aeroplane is able to descend safely within four minutes to a cabin pressure altitude of 13 000 ft.

(f) The required minimum supply in Table 1, row 1 item (b)(1) and row 2, shall cover the quantity of oxygen necessary for a constant rate of descent from the aeroplane's maximum certified operating altitude to 10 000 ft in 10 minutes and followed by 20 minutes at 10 000 ft.

(g) The required minimum supply in Table 1, row 1 item 1(b)(2), shall cover the quantity of oxygen necessary for a constant rate of descent from the aeroplane's maximum certified operating altitude to 10 000 ft in 10 minutes followed by 110 minutes at 10 000 ft.

(h) The required minimum supply in Table 1, row 3, shall cover the quantity of oxygen necessary for a constant rate of descent from the aeroplane's maximum certified operating altitude to 15 000 ft in 10 minutes.

Table 1 **Oxygen minimum requirements for pressurised aeroplanes**

Supply for	Duration and cabin pressure altitude
1. Occupants of flight crew compartment seats on flight crew compartment duty	(a) The entire flying time when the cabin pressure altitude exceeds 13 000 ft. (b) The remainder of the flying time when the cabin pressure altitude exceeds 10 000 ft but does not exceed 13 000 ft, after the initial 30 minutes at these altitudes, but in no case less than: (1) 30 minutes' supply for aeroplanes certified to fly at altitudes not exceeding 25 000 ft; and (2) 2 hours' supply for aeroplanes certified to fly at altitudes of more than 25 000 ft.
2. Required cabin crew members	(a) The entire flying time when the cabin pressure altitude exceeds 13 000 ft, but not less than 30 minutes' supply. (b) The remainder of the flying time when the cabin pressure altitude exceeds 10 000 ft but does not exceed 13 000 ft, after the initial 30 minutes at these altitudes.
3. 100 % of passengers(1)	The entire flying time when the cabin pressure altitude exceeds 15 000 ft, but in no case less than 10 minutes' supply.
4. 30 % of passengers(1)	The entire flying time when the cabin pressure altitude exceeds 14000 ft but does not exceed 15 000 ft.
5. 10 % of passengers(1)	The remainder of the flying time when the cabin pressure altitude exceeds 10 000 ft but does not exceed 14000 ft, after the initial 30 minutes at these altitudes.
(1) Passenger numbers in Table 1 refer to passengers actually carried on board, including persons younger than 24 months.	

CAT.IDE.A.240 Supplemental oxygen — non-pressurised aeroplanes

Non-pressurised aeroplanes operated at pressure altitudes above 10 000 ft shall be equipped with supplemental oxygen equipment capable of storing and dispensing the oxygen supplies in accordance with Table 1.

Table 1

Oxygen minimum requirements for non-pressurised aeroplanes

Supply for	Duration and cabin pressure altitude
1. Occupants of flight crew compartment seats on flight crew compartment duty and crew members assisting flight crew in their duties	The entire flying time at pressure altitudes above 10 000 ft.
2. Required cabin crew members	The entire flying time at pressure altitudes above 13 000 ft and for any period exceeding 30 minutes at pressure altitudes above 10 000 ft but not exceeding 13 000 ft.
3. Additional crew members and 100 % of passengers(1)	The entire flying time at pressure altitudes above 13 000 ft.
4. 10 % of passengers(1)	The entire flying time after 30 minutes at pressure altitudes above 10 000 ft but not exceeding 13 000 ft.
(1) Passenger numbers in Table 1 refer to passengers actually carried on board, including persons younger than 24 months.	

CAT.IDE.A.245 Crew protective breathing equipment

(a) All pressurised aeroplanes and those unpressurised aeroplanes with an MCTOM of more than 5 700 kg or having an MOPSC of more than 19 seats shall be equipped with protective breathing equipment (PBE) to protect the eyes, nose and mouth and to provide for a period of at least 15 minutes:

(1) oxygen for each flight crew member on duty in the flight crew compartment;

(2) breathing gas for each required cabin crew member, adjacent to his/her assigned station; and

(3) breathing gas from a portable PBE for one member of the flight crew, adjacent to his/her assigned station, in the case of aeroplanes operated with a flight crew of more than one and no cabin crew member.

(b) A PBE intended for flight crew use shall be installed in the flight crew compartment and be accessible for immediate use by each required flight crew member at his/her assigned station.

(c) A PBE intended for cabin crew use shall be installed adjacent to each required cabin crew member station.

(d) Aeroplanes shall be equipped with an additional portable PBE installed adjacent to the hand fire extinguisher referred to in CAT.IDE.A.250 (b) and (c), or adjacent to the entrance of the cargo compartment, in case the hand fire extinguisher is installed in a cargo compartment.

(e) A PBE while in use shall not prevent the use of the means of communication referred to in CAT.IDE.A.170, CAT.IDE.A.175, CAT.IDE.A.270 and CAT.IDE.A.330.

CAT.IDE.A.250 Hand fire extinguishers

(a) Aeroplanes shall be equipped with at least one hand fire extinguisher in the flight crew compartment.

(b) At least one hand fire extinguisher shall be located in, or readily accessible for use in, each galley not located on the main passenger compartment.

(c) At least one hand fire extinguisher shall be available for use in each class A or class B cargo or baggage compartment and in each class E cargo compartment that is accessible to crew members in flight.

(d) The type and quantity of extinguishing agent for the required fire extinguishers shall be suitable for the type of fire likely to occur in the compartment where the extinguisher is intended to be used and to minimise the hazard of toxic gas concentration in compartments occupied by persons.

(e) Aeroplanes shall be equipped with at least a number of hand fire extinguishers in accordance with Table 1, conveniently located to provide adequate availability for use in each passenger compartment.

Table 1 **Number of hand fire extinguishers**

MOPSC	Number of extinguishers
7-30	1
31-60	2
61-200	3
201-300	4
301-400	5
401-500	6
501-600	7
601 or more	8

CAT.IDE.A.255 Crash axe and crowbar

(a) Aeroplanes with an MCTOM of more than 5 700 kg or with an MOPSC of more than nine shall be equipped with at least one crash axe or crowbar located in the flight crew compartment.

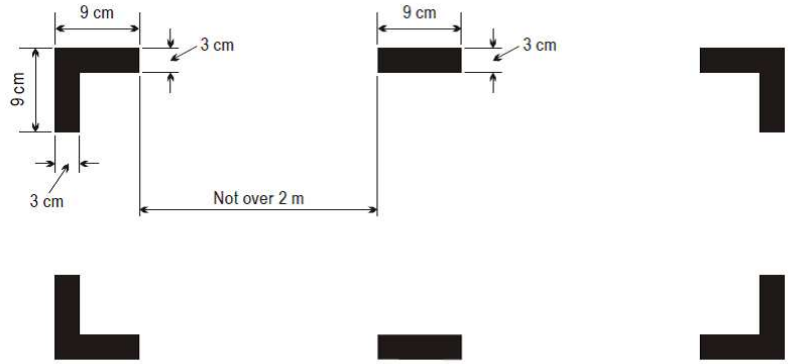
(b) For aircraft obtaining their Certificate of Registration (CofR) in the Kingdom of Thailand on or after 1 January 2027, an additional crash axe or crowbar shall be installed in or near the rearmost galley area for aeroplanes with an MOPSC of more than 200.

(c) Crash axes and crowbars located in the passenger compartment, when applicable, shall not be visible to passengers.

CAT.IDE.A.260 Marking of break-in points

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

Figure 1



CAT.IDE.A.265 Means for emergency evacuation

(a) Aeroplanes with passenger emergency exit sill heights of more than 1,83 m (6 ft) above the ground shall be equipped at each of those exits with a means to enable passengers and crew to reach the ground safely in an emergency.

(b) Notwithstanding (a), such means are not required at overwing exits if the designated place on the aeroplane structure at which the escape route terminates is less than 1,83 m (6 ft) from the ground with the aeroplane on the ground, the landing gear extended, and the flaps in the take-off or landing position, whichever flap position is higher from the ground.

(c) Aeroplanes required to have a separate emergency exit for the flight crew for which the lowest point of the emergency exit is more than 1,83 m (6 ft) above the ground shall have a means to assist all flight crew members in descending to reach the ground safely in an emergency.

(d) The heights referred to in (a) and (c) shall be measured:

(1) with the landing gear extended; and

(2) after the collapse of, or failure to extend of, one or more legs of the landing gear, in the case of aeroplanes with a type certificate issued after 31 March 2000.

CAT.IDE.A.270 Megaphones

Aeroplanes with an MOPSC of more than 60 and carrying at least one passenger shall be equipped with the following quantities of portable battery-powered megaphones readily accessible for use by crew members during an emergency evacuation:

(a) For each passenger deck:

Table 1 **Number of megaphones**

Passenger seating configuration	Number of megaphones
61 to 99	1
100 or more	2

(b) For aeroplanes with more than one passenger deck, in all cases when the total passenger seating configuration is more than 60, at least one megaphone.

CAT.IDE.A.275 Emergency lighting and marking

(a) Aeroplanes with an MOPSC of more than nine shall be equipped with an emergency lighting system having an independent power supply to facilitate the evacuation of the aeroplane.

(b) In the case of aeroplanes with an MOPSC of more than 19, the emergency lighting system, referred to in (a) shall include:

(1) sources of general cabin illumination;
(2) internal lighting in floor level emergency exit areas;
(3) illuminated emergency exit marking and locating signs;
(4) in the case of aeroplanes for which the application for the type certificate or equivalent was filed before 1 May 1972, when operated by night, exterior emergency lighting at all overwing exits and at exits where descent assist means are required;
(5) in the case of aeroplanes for which the application for the type certificate or equivalent was filed after 30 April 1972, when operated by night, exterior emergency lighting at all passenger emergency exits; and
(6) in the case of aeroplanes for which the type certificate was first issued on or after 31 December 1957, floor proximity emergency escape path marking system(s) in the passenger compartments.

(c) For aeroplanes with an MOPSC of 19 or less and type certified on the basis of the relevant certification specification or equivalent, the emergency lighting system referred to in point (a) shall include the equipment referred to in points (1), (2) and (3) of point (b)

(d) For aeroplanes with an MOPSC of 19 or less that are not certified on the basis of the relevant certification specification or equivalent, the emergency lighting system referred to in point (a) shall include the equipment referred to in point (b)(1).

(e) Aeroplanes with an MOPSC of nine or less, operated at night, shall be equipped with a source of general cabin illumination to facilitate the evacuation of the aeroplane.

CAT.IDE.A.280 Emergency locator transmitter (ELT)

(a) Aeroplanes with an MOPSC of more than 19 shall be equipped with at least:

(1) two ELTs, one of which shall be automatic, or one ELT and one aircraft localisation means meeting the requirement of CAT.GEN.MPA.210, in the case of aeroplanes first issued with an individual CofA after 1 July 2008; or

(2) one automatic ELT or two ELTs of any type or one aircraft localisation means meeting the requirement of CAT.GEN.MPA.210, in the case of aeroplanes first issued with an individual CofA on or before 1 July 2008.

(b) Aeroplanes with an MOPSC of 19 or less shall be equipped with at least:

(1) one automatic ELT or one aircraft localisation means meeting the requirement of CAT.GEN.MPA.210, in the case of aeroplanes first issued with an individual CofA after 1 July 2008; or

(2) one ELT of any type or one aircraft localisation means meeting the requirement of CAT.GEN. MPA.210, in the case of aeroplanes first issued with an individual CofA on or before 1 July 2008.

(c) An ELT of any type shall be capable of transmitting simultaneously on 121.5 MHz and 406 MHz.

CAT.IDE.A.285 Flight over water

(a) The following aeroplanes shall be equipped with a life-jacket for each person on board or equivalent flotation device for each person on board younger than 24 months, stowed in a position that is readily accessible from the seat or berth of the person for whose use it is provided:

(1) landplanes operated over water at a distance of more than 50 NM from the shore or taking off or landing at an aerodrome where the take-off or approach path is so disposed over water that the event of mishap there would be a likelihood of a ditching;

(2) landplanes flying en-route over water beyond gliding distance from the shore; and

(3) seaplanes operated over water.

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

(c) Seaplanes operated over water shall be equipped with the following:

(1) a sea anchor and other equipment necessary to facilitate mooring, anchoring or manoeuvring the seaplane on water, appropriate to its size, mass and handling characteristics;

(2) equipment for making the sound signals as prescribed in the International Regulations for Preventing Collisions at Sea, where applicable.

(d) Aeroplanes operated over water at a distance away from land suitable for making an emergency landing, greater than that corresponding to:

(1) 120 minutes at cruising speed or 400 NM, whichever is the lesser, in the case of aeroplanes capable of continuing the flight to an aerodrome with the critical engine(s) becoming inoperative at any point along the route or planned diversions; or

(2) for all other aeroplanes, 30 minutes at cruising speed or 100 NM, whichever is the lesser, shall be equipped with the equipment specified in (e).

(e) Aeroplanes complying with (d) shall carry the following equipment:

(1) life-rafts in sufficient numbers to carry all persons on board, stowed so as to facilitate their ready use in an emergency, and being of sufficient size to accommodate all the survivors in the event of a loss of one raft of the largest rated capacity;

(2) a survivor locator light in each life-raft;

(3) life-saving equipment to provide the means for sustaining life, as appropriate for the flight to be undertaken; and

(4) at least two survival ELTs (ELT(S)).

(f) By 1 January 2019 at the latest, aeroplanes with an MCTOM of more than 27 000 kg and with an MOPSC of more than 19 and all aeroplanes with an MCTOM of more than 45 500 kg shall be fitted with a securely attached underwater locating device that operates at a frequency of 8.8 kHz ± 1 kHz, unless:

(1) the aeroplane is operated over routes on which it is at no point at a distance of more than 180 NM from the shore; or

(2) the aeroplane is equipped with robust and automatic means to accurately determine, following an accident where the aeroplane is severely damaged, the location of the point of end of flight.

CAT.IDE.A.305 Survival equipment

(a) Aeroplanes operated over areas in which search and rescue would be especially difficult shall be equipped with:

(1) signalling equipment to make the distress signals;

(2) at least one ELT(S); and

(3) additional survival equipment for the route to be flown taking account of the number of persons on board.

(b) The additional survival equipment specified in (a)(3) does not need to be carried when the aeroplane:

(1) remains within a distance from an area where search and rescue is not especially difficult corresponding to:

(i) 120 minutes at one-engine-inoperative (OEI) cruising speed for aeroplanes capable of continuing the flight to an aerodrome with the critical engine(s) becoming inoperative at any point along the route or planned diversion routes; or

(ii) 30 minutes at cruising speed for all other aeroplanes;

(2) remains within a distance no greater than that corresponding to 90 minutes at cruising speed from an area suitable for making an emergency landing, for aeroplanes certified in accordance with the applicable airworthiness standard.

CAT.IDE.A.325 Headset

(a) Aeroplanes shall be equipped with a headset with a boom or throat microphone or equivalent for each flight crew member at their assigned station in the flight crew compartment.

(b) Aeroplanes operated under IFR or at night shall be equipped with a transmit button on the manual pitch and roll control for each required flight crew member.

CAT.IDE.A.330 Radio communication equipment

(a) Aeroplanes shall be equipped with the radio communication equipment required by the applicable airspace requirements.

(b) The radio communication equipment shall provide for communication on the aeronautical emergency frequency 121.5 MHz.

(c) For operations where communication equipment is required to meet an RCP specification for performance-based communication (PBC), an aeroplane shall be provided with communication equipment which will enable it to operate in accordance with the prescribed RCP specification(s)

CAT.IDE.A.335 Audio selector panel

Aeroplanes operated under IFR shall be equipped with an audio selector panel operable from each required flight crew member station.

CAT.IDE.A.340 Radio equipment for operations under VFR over routes navigated by reference to visual landmarks

Aeroplanes operated under VFR over routes navigated by reference to visual landmarks shall be equipped with radio communication equipment necessary under normal radio propagation conditions to fulfil the following:

(a) communicate with appropriate ground stations;

(b) communicate with appropriate ATC stations from any point in controlled airspace within which flights are intended; and

(c) receive meteorological information.

CAT.IDE.A.345 Communication, navigation and surveillance equipment for operations under IFR or under VFR over routes not navigated by reference to visual landmarks

(a) Aeroplanes operated under IFR or under VFR over routes that cannot be navigated by reference to visual landmarks shall be equipped with radio communication, navigation and surveillance equipment in accordance with the applicable airspace requirements.

(b) Radio communication equipment shall include at least two independent radio communication systems necessary under normal operating conditions to communicate with an appropriate ground station from any point on the route, including diversions.

(c) Notwithstanding point (b), aeroplanes operated for short haul operations in the North Atlantic high-level (NAT HLA) airspace and not crossing the North Atlantic shall be equipped with at least one long range communication system, in case alternative communication procedures are published for the airspace concerned.

(d) Aeroplanes shall have sufficient navigation equipment to ensure that, in the event of the failure of one item of equipment at any stage of the flight, the remaining equipment shall allow safe navigation in accordance with the flight plan.

(e) Aeroplanes operated on flights in which it is intended to land in IMC shall be equipped with suitable equipment capable of providing guidance to a point from which a visual landing can be

performed for each aerodrome at which it is intended to land in IMC and for any designated alternate aerodrome.

(f) For PBN operations the aircraft shall meet the airworthiness certification requirements for the appropriate navigation specification.

CAT.IDE.A.350 Transponder

Aeroplanes shall be equipped with a pressure altitude reporting secondary surveillance radar (SSR) transponder and any other SSR transponder capability required for the route being flown.

All Aeroplanes, including those for which the individual certificate of airworthiness is first issued after 1 January 2009, shall be equipped with a data source that provides press-altitude information, with a resoloution of 7.62 m (25 ft) or better.

CAT.IDE.A.355 Management of aeronautical databases

(a) Aeronautical databases used on certified aircraft system applications shall meet data quality requirements that are adequate for the intended use of the data.

(b) The operator shall ensure the timely distribution and insertion of current and unaltered aeronautical databases to all aircraft that require them.

(c) Notwithstanding any other occurrence reporting requirements as defined in the Kingdom of Thailand Civil Aviation Occurrence reporting Regulation, or other national provisions the operator shall report to the database provider instances of erroneous, inconsistent or missing data that might be reasonably expected to constitute a hazard to flight.

In such cases, the operator shall inform flight crew and other personnel concerned, and shall ensure that the affected data is not used.

CAT.IDE.A.360 Surveillance Equipment

(a) An aeroplane shall be provided with surveillance equipment which will enable it to operate in accordance with the requirements of air traffic services

(b) For operations where surveillance equipment is required to meet RSP specification for performance-based surveillance (PBS), an aeroplane shall, in addition to the requirement specified at (a):

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

CAT.IDE.A.365 Radiation Indicator – Aeroplanes

All aeroplanes intended to be operated above 15 000 m (49 000 ft) shall carry equipment to measure and indicate contiunuously the dose rate of total cosmic radiation being received (i.e. the total of ionizing and neutron radiation of galactic and solar origin) and the cumulative dose on each flight. The display unit of the equipment shall be readily visible to a flight crew member.

SECTION 2 Helicopters

CAT.IDE.H.100 Instruments and equipment — general

(a) Instruments and equipment required by this Subpart shall be approved in accordance with the applicable airworthiness requirements, except for the following items:

(1) Independent portable lights;
(2) An accurate time piece;
(3) Chart holder;
(4) First-aid kit;
(5) Megaphones;
(6) Survival and signalling equipment;
(7) Sea anchors and equipment for mooring;
(8) Child restraint devices.

(b) Instruments and equipment not required by this Subpart that do not need to be approved in accordance with the applicable airworthiness requirements but are carried on a flight, shall comply with the following:

(1) the information provided by these instruments, equipment or accessories shall not be used by the flight crew to comply with the the requirements of the Air Navigation Act B.E 2497, Kingdom of Thailand national aviation requirements or CAT.IDE.H.330, CAT.IDE.H.335, CAT.IDE.H.340 and CAT.IDE.H.345; and
(2) the instruments and equipment shall not affect the airworthiness of the helicopter, even in the case of failures or malfunction.

(c) If equipment is to be used by one flight crew member at his/her station during flight, it shall be readily operable from that station. When a single item of equipment is required to be operated by more than one flight crew member it shall be installed so that the equipment is readily operable from any station at which the equipment is required to be operated.

(d) Those instruments that are used by any flight crew member shall be so arranged as to permit the flight crew member to see the indications readily from his/her station, with the minimum practicable deviation from the position and line of vision that he/she normally assumes when looking forward along the flight path.

(e) All required emergency equipment shall be easily accessible for immediate use.

CAT.IDE.H.105 Minimum equipment for flight

A flight shall not be commenced when any of the helicopter's instruments, items of equipment or functions required for the intended flight are inoperative or missing, unless:

(a) the helicopter is operated in accordance with the operator's MEL; or

(b) the operator is approved by the CAAT to operate the helicopter within the constraints of the MMEL in accordance with point ORO.MLR.105(j).

CAT.IDE.H.115 Operating lights

(a) Helicopters operated under VFR by day shall be equipped with an anti-collision light system.

(b) Helicopters operated at night or under IFR shall, in addition to (a), be equipped with:

(1) lighting supplied from the helicopter's electrical system to provide adequate illumination for all instruments and equipment essential to the safe operation of the helicopter;

(2) lighting supplied from the helicopter's electrical system to provide illumination in all passenger compartments;

(3) an independent portable light for each required crew member readily accessible to crew members when seated at their designated stations;

(4) navigation/position lights;

(5) two landing lights of which at least one is adjustable in flight so as to illuminate the ground in front of and below the helicopter and the ground on either side of the helicopter; and

(6) lights to conform with the International Regulations for Preventing Collisions at Sea if the helicopter is amphibious.

CAT.IDE.H.125 Operations under VFR by day — flight and navigational instruments and associated equipment

(a) Helicopters operated under VFR by day shall be equipped with the following equipment, available at the pilot's station:

(1) A means of measuring and displaying:

(i) Magnetic heading;

(ii) Time in hours, minutes, and seconds;

(iii) Barometric altitude;

(iv) Indicated airspeed;

(v) Vertical speed;

(vi) Slip; and

(vii) Outside air temperature.

(2) A means of indicating when the supply of power to the required flight instruments is not adequate.

(b) Whenever two pilots are required for the operation, an additional separate means of displaying the following shall be available for the second pilot:

(1) Barometric altitude;

(2) Indicated airspeed;

(3) Vertical speed; and

(4) Slip.

(c) Helicopters with an MCTOM of more than 3 175 kg or any helicopter operating over water when out of sight of land or when the visibility is less than 1 500 m, shall be equipped with a means of measuring and displaying:

(1) Attitude; and

(2) Heading.

(d) A means for preventing malfunction of the airspeed indicating systems due to condensation or icing shall be available for helicopters with an MCTOM of more than 3 175 kg or an MOPSC of more than nine.

CAT.IDE.H.130 Operations under IFR or at night — flight and navigational instruments and associated equipment

Helicopters operated under VFR at night or under IFR shall be equipped with the following equipment, available at the pilot's station:

(a) A means of measuring and displaying:

(1) Magnetic heading;
(2) Time in hours, minutes and seconds;
(3) Indicated airspeed;
(4) Vertical speed;
(5) Slip;
(6) Attitude;
(7) Stabilised heading; and
(8) Outside air temperature.

(b) Two means of measuring and displaying Barometric altitude. For single-pilot operations under VFR at night one pressure altimeter may be substituted by a radio altimeter.

(c) A means of indicating when the supply of power to the required flight instruments is not adequate.

(d) A means of preventing malfunction of the airspeed indicating systems required in (a)(3) and (h)(2) due to either condensation or icing.

(e) A means of annunciating to the flight crew the failure of the means required in (d) for helicopters:

(1) issued with an individual CofA on or after 1 August 1999; or
(2) issued with an individual CofA before 1 August 1999 with an MCTOM of more than 3 175 kg, and with an MOPSC of more than nine.

(f) A standby means of measuring and displaying attitude that:

(1) is powered continuously during normal operation and, in the event of a total failure of the normal electrical generating system, is powered from a source independent of the normal electrical generating system;
(2) operates independently of any other means of measuring and displaying attitude;
(3) is capable of being used from either pilot's station;
(4) is operative automatically after total failure of the normal electrical generating system;
(5) provides reliable operation for a minimum of 30 minutes or the time required to fly to a suitable alternate landing site when operating over hostile terrain or offshore, whichever is greater, after total failure of the normal electrical generating system, taking into account other loads on the emergency power supply and operational procedures;
(6) is appropriately illuminated during all phases of operation; and
(7) is associated with a means to alert the flight crew when operating under its dedicated power supply, including when operated by emergency power.

(g) An alternate source of static pressure for the means of measuring altitude, airspeed and vertical speed.

(h) Whenever two pilots are required for the operation, a separate means for displaying for the second pilot:

(1) Barometric altitude;
(2) Indicated airspeed;
(3) Vertical speed;
(4) Slip;
(5) Attitude; and
(6) Stabilised heading.

(i) For IFR operations, a chart holder in an easily readable position that can be illuminated for night operations.

CAT.IDE.H.135 Additional equipment for single-pilot operation under IFR

(Note Single-pilot IFR helicopter operations are not authorised in the Kingdom of Thailand)

Helicopters operated under IFR with a single-pilot shall be equipped with an autopilot with at least altitude hold and heading mode.

CAT.IDE.H.145 Radio altimeters

(a) Helicopters on flights over water shall be equipped with a radio altimeter capable of emitting an audio warning below a pre-set height and a visual warning at a height selectable by the pilot, when operating:

(1) out of sight of the land;
(2) in a visibility of less than 1 500 m;
(3) at night; or
(4) at a distance from land corresponding to more than three minutes at normal cruising speed.

CAT.IDE.H.160 Airborne weather detecting equipment

Helicopters with an MOPSC of more than nine and operated under IFR or at night shall be equipped with airborne weather detecting equipment when current weather reports indicate that thunderstorms or other potentially hazardous weather conditions, regarded as detectable with airborne weather detecting equipment, may be expected to exist along the route to be flown.

CAT.IDE.H.165 Additional equipment for operations in icing conditions at night

(a) Helicopters operated in expected or actual icing conditions at night shall be equipped with a means to illuminate or detect the formation of ice.

(b) The means to illuminate the formation of ice shall not cause glare or reflection that would handicap crew members in the performance of their duties.

CAT.IDE.H.170 Flight crew interphone system

Helicopters operated by more than one flight crew member shall be equipped with a flight crew interphone system, including headsets and microphones for use by all flight crew members.

CAT.IDE.H.175 Crew member interphone system

Helicopters shall be equipped with a crew member interphone system when carrying a crew member other than a flight crew member.

CAT.IDE.H.180 Public address system

(a) Helicopters with an MOPSC of more than nine shall be equipped with a public address system, with the exception of (b).

(b) Notwithstanding (a) helicopters with an MOPSC of more than nine and less than 20 are exempted from having a public address system, if:

(1) the helicopter is designed without a bulkhead between pilot and passengers; and

(2) the operator is able to demonstrate that when in flight, the pilot's voice is audible and intelligible at all passengers' seats.

CAT.IDE.H.185 Cockpit voice recorder

(a) The following helicopter types shall be equipped with a cockpit voice recorder (CVR):

(1) all helicopters with an MCTOM of more than 7 000 kg; and

(2) helicopters with an MCTOM of more than 3 175 kg and first issued with an individual CofA on or after 1 January 1987.

(b) The CVR shall be capable of retaining the data recorded during at least:

(1) the preceding two hours for helicopters referred to in (a)(1) and (a)(2), when first issued with an individual CofA on or after 1 January 2016;

(2) the preceding one hour for helicopters referred to in (a)(1), when first issued with an individual CofA on or after 1 August 1999 and before 1 January 2016;

(3) the preceding 30 minutes for helicopters referred to in (a)(1), when first issued with an individual CofA before 1 August 1999; or

(4) the preceding 30 minutes for helicopters referred to in (a)(2), when first issued with an individual CofA before 1 January 2016.

(c) By 1 January 2019 at the latest, the CVR shall record on means other than magnetic tape or magnetic wire.

(d) The CVR shall record with reference to a timescale:

(1) voice communications transmitted from or received in the flight crew compartment by radio;

(2) flight crew members' voice communications using the interphone system and the public address system, if installed;

(3) the aural environment of the flight crew compartment, including without interruption:

(i) for helicopters first issued with an individual CofA on or after 1 August 1999, the audio signals received from each crew microphone;

(ii) for helicopters first issued with an individual CofA before 1 August 1999, the audio signals received from each crew microphone, where practicable;

(4) voice or audio signals identifying navigation or approach aids introduced into a headset or speaker.

(e) The CVR shall start to record prior to the helicopter moving under its own power and shall continue to record until the termination of the flight when the helicopter is no longer capable of moving under its own power.

(f) In addition to (e), for helicopters referred to in (a)(2) issued with an individual CofA on or after 1 August 1999:

(1) the CVR shall start automatically to record prior to the helicopter moving under its own power and continue to record until the termination of the flight when the helicopter is no longer capable of moving under its own power; and

(2) depending on the availability of electrical power, the CVR shall start to record as early as possible during the cockpit checks prior to engine start at the beginning of the flight until the cockpit checks immediately following engine shutdown at the end of the flight.

(g) If the CVR is not deployable, it shall have a device to assist in locating it under water. By 1 January 2020 at the latest, this device shall have a minimum underwater transmission time of 90 days. If the CVR is deployable, it shall have an automatic emergency locator transmitter.

CAT.IDE.H.190 Flight data recorder

(a) The following helicopters shall be equipped with an FDR that uses a digital method of recording and storing data and for which a method of readily retrieving that data from the storage medium is available:

(1) helicopters with an MCTOM of more than 3 175 kg and first issued with an individual CofA on or after 1 August 1999;

(2) helicopters with an MCTOM of more than 7 000 kg, or an MOPSC of more than nine, and first issued with an individual CofA on or after 1 January 1989 but before 1 August 1999.

(b) The FDR shall record the parameters required to determine accurately the:

(1) flight path, speed, attitude, engine power, operation and configuration and be capable of retaining the data recorded during at least the preceding 10 hours, for helicopters referred to in (a)(1) and first issued with an individual CofA on or after 1 January 2016;

(2) flight path, speed, attitude, engine power and operation and be capable of retaining the data recorded during at least the preceding eight hours, for helicopters referred to in (a)(1) and first issued with an individual CofA before 1 January 2016;

(3) flight path, speed, attitude, engine power and operation and be capable of retaining the data recorded during at least the preceding five hours, for helicopters referred to in (a)(2).

(c) Data shall be obtained from helicopter sources that enable accurate correlation with information displayed to the flight crew.

(d) The FDR shall automatically start to record the data prior to the helicopter being capable of moving under its own power and shall stop automatically after the helicopter is incapable of moving under its own power.

(e) If the FDR is not deployable, it shall have a device to assist in locating it under water. By 1 January 2020 at the latest, this device shall have a minimum underwater transmission time of 90 days. If the FDR is deployable, it shall have an automatic emergency locator transmitter.

CAT.IDE.H.191 Lightweight flight recorder

(a) Turbine-engined helicopters with an MCTOM of 2 250 kg or more shall be equipped with a flight recorder if all of the following conditions are met:

(1) they are not within the scope of point CAT.IDE.H.190(a);

(2) they are first issued with an individual CofA on or after 5 September 2022.

(b) The flight recorder shall record, by means of flight data or images, information that is sufficient to determine the flight path and aircraft speed.

(c) The flight recorder shall be capable of retaining the flight data and the images recorded during at least the preceding 5 hours.

(d) The flight recorder shall automatically start to record prior to the helicopter being capable of moving under its own power and shall stop automatically after the helicopter is no longer capable of moving under its own power.

(e) If the flight recorder records images or audio of the flight crew compartment, then a function shall be provided which can be operated by the commander and which modifies image and audio recordings made before the operation of that function, so that those recordings cannot be retrieved using normal replay or copying techniques.

CAT.IDE.H.195 Data link recording

(a) Helicopters first issued with an individual CofA on or after 8 April 2014 that have the capability to operate data link communications and are required to be equipped with a CVR, shall record on a recorder, where applicable:

(1) data link communication messages related to ATS communications to and from the helicopter, including messages applying to the following applications:

(i) data link initiation;

(ii) controller-pilot communication;

(iii) addressed surveillance;

(iv) flight information;

(v) as far as is practicable, given the architecture of the system, aircraft broadcast surveillance;

(vi) as far as is practicable, given the architecture of the system, aircraft operational control data;

(vii) as far as is practicable, given the architecture of the system, graphics;

(2) information that enables correlation to any associated records related to data link communications and stored separately from the helicopter; and

(3) information on the time and priority of data link communications messages, taking into account the system's architecture.

(b) The recorder shall use a digital method of recording and storing data and information and a method of readily retrieving that data shall be available. The recording method shall allow the data to match the data recorded on the ground.

(c) The recorder shall be capable of retaining data recorded for at least the same duration as set out for CVRs in CAT.IDE.H.185.

(d) If the recorder is not deployable, it shall have a device to assist in locating it under water. By 1 January 2020 at the latest, this device shall have a minimum underwater transmission time of 90 days. If the recorder is deployable, it shall have an automatic emergency locator transmitter.

(e) The requirements applicable to the start and stop logic of the recorder are the same as the requirements applicable to the start and stop logic of the CVR contained in CAT.IDE.H.185(d) and (e).

CAT.IDE.H.200 Flight data and cockpit voice combination recorder

Compliance with CVR and FDR requirements may be achieved by the carriage of one combination recorder.

CAT.IDE.H.205 Seats, seat safety belts, restraint systems and child restraint devices

(a) Helicopters shall be equipped with:

(1) a seat or berth for each person on board who is aged 24 months or more;

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

(3) for helicopters first issued with an individual CofA on or after 1 August 1999, a safety belt with upper torso restraint system for use on each passenger seat for each passenger aged 24 months or more;

(4) a child restraint device (CRD) for each person on board younger than 24 months;

(5) a seat belt with upper torso restraint system incorporating a device that will automatically restrain the occupant's torso in the event of rapid deceleration on each flight crew seat;

(6) a seat belt with upper torso restraint system on each seat for the minimum required cabin crew.

(b) A seat belt with upper torso restraint system shall:

(1) have a single point release; and

(2) on flight crew seats and on the seats for the minimum required cabin crew include two shoulder straps and a seat belt that may be used independently.

CAT.IDE.H.210 Fasten seat belt and no smoking signs

Helicopters in which not all passenger seats are visible from the flight crew seat(s) shall be equipped with a means of indicating to all passengers and cabin crew when seat belts shall be fastened and when smoking is not allowed.

CAT.IDE.H.220 First-aid kits

(a) Helicopters shall be equipped with at least one first-aid kit.

(b) First-aid kits shall be:

(1) readily accessible for use;

(2) kept up to date.

CAT.IDE.H.240 Supplemental oxygen — non-pressurised helicopters

Non-pressurised helicopters operated at pressure altitudes above 10 000 ft shall be equipped with supplemental oxygen equipment capable of storing and dispensing the oxygen supplies in accordance with the following tables.

Table 1 **Oxygen minimum requirements for complex non-pressurised helicopters**

Supply for	Duration and cabin pressure altitude
1. Occupants of flight crew compartment seats on flight crew compartment duty and crew members assisting flight crew in their duties	The entire flying time at pressure altitudes above 10 000 ft.
2. Required cabin crew members	The entire flying time at pressure altitudes above 13 000 ft and for any period exceeding 30 minutes at pressure altitudes above 10 000 ft but not exceeding 13 000 ft.
3. Additional crew members and 100 % of passengers(1)	The entire flying time at pressure altitudes above 13 000 ft.
4. 10 % of passengers(1)	The entire flying time after 30 minutes at pressure altitudes above 10 000 ft but not exceeding 13 000 ft.
(1) Passenger numbers in Table 1 refer to passengers actually carried on board including persons younger than 24 months.	

Table 2 Oxygen minimum requirements for other-than-complex non-pressurised helicopters

Supply for	Duration and cabin pressure altitude
1. Occupants of flight crew compartment seats on flight crew compartment duty, crew members assisting flight crew in their duties, and required cabin crew members	The entire flying time at pressure altitudes above 13 000 ft and for any period exceeding 30 minutes at pressure altitudes above 10 000 ft but not exceeding 13 000 ft.
2. Additional crew members and 100 % of passengers(1)	The entire flying time at pressure altitudes above 13 000 ft.
3. 10 % of passengers(1)	The entire flying time after 30 minutes at pressure altitudes above 10 000 ft but not exceeding 13 000 ft.
(1) Passenger numbers in Table 2 refer to passengers actually carried on board including persons younger than 24 months.	

CAT.IDE.H.250 Hand fire extinguishers

(a) Helicopters shall be equipped with at least one hand fire extinguisher in the flight crew compartment.

(b) At least one hand fire extinguisher shall be located in, or readily accessible for use in, each galley not located on the main passenger compartment.

(c) At least one hand fire extinguisher shall be available for use in each cargo compartment that is accessible to crew members in flight.

(d) The type and quantity of extinguishing agent for the required fire extinguishers shall be suitable for the type of fire likely to occur in the compartment where the extinguisher is intended to be used and to minimise the hazard of toxic gas concentration in compartments occupied by persons.

(e) The helicopter shall be equipped with at least a number of hand fire extinguishers in accordance with Table 1, conveniently located to provide adequate availability for use in each passenger compartment.

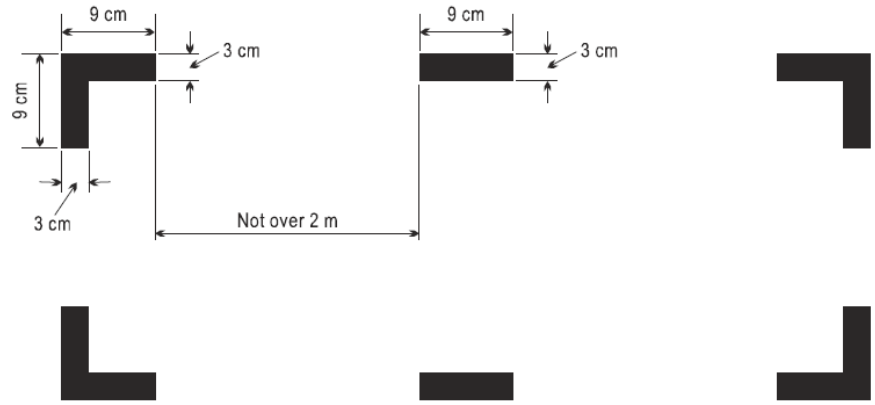
Table 1 **Number of hand fire extinguishers**

MOPSC	Number of extinguishers
7-30	1
31-60	2
61-200	3

CAT.IDE.H.260 Marking of break-in points

If areas of the helicopter's fuselage suitable for break-in by rescue crews in an emergency are marked, such areas shall be marked as shown in Figure 1.

Figure 1



CAT.IDE.H.270 Megaphones

Helicopters with an MOPSC of more than 19 shall be equipped with one portable battery-powered megaphone readily accessible for use by crew members during an emergency evacuation.

CAT.IDE.H.275 Emergency lighting and marking

(a) Helicopters with an MOPSC of more than 19 shall be equipped with:

(1) an emergency lighting system having an independent power supply to provide a source of general cabin illumination to facilitate the evacuation of the helicopter; and

(2) emergency exit marking and locating signs visible in daylight or in the dark.

(b) Helicopters shall be equipped with emergency exit markings visible in daylight or in the dark when operated:

(1) in performance class 1 or 2 on a flight over water at a distance from land corresponding to more than 10 minutes flying time at normal cruising speed;

(2) in performance class 3 on a flight over water at a distance corresponding to more than three minutes flying time at normal cruising speed.

CAT.IDE.H.280 Emergency locator transmitter (ELT)

(a) Helicopters shall be equipped with at least one automatic ELT.

(b) An ELT of any type shall be capable of transmitting simultaneously on 121.5 MHz and 406 MHz.

CAT.IDE.H.290 Life-jackets

(a) Helicopters shall be equipped with a life-jacket for each person on board or equivalent floatation device for each person on board younger than 24 months, stowed in a position that is readily accessible from the seat or berth of the person for whose use it is provided, when operated in:

(1) performance class 1 or 2 on a flight over water at a distance from land corresponding to more than 10 minutes flying time at normal cruising speed;

(2) performance class 3 on a flight over water beyond autorotational distance from land;

(3) performance class 2 or 3 when taking off or landing at an aerodrome or operating site where the take-off or approach path is over water.

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

CAT.IDE.H.295 Crew survival suits

Each crew member shall wear a survival suit when operating in performance class 3 on a flight over water beyond autorotational distance or safe forced landing distance from land, when the weather report or forecasts available to the commander indicate that the sea temperature will be less than plus 10 °C during the flight.

CAT.IDE.H.300 Life-rafts, survival ELTs and survival equipment on extended overwater flights

Helicopters operated:

(a) in performance class 1 or 2 on a flight over water at a distance from land corresponding to more than 10 minutes flying time at normal cruising speed;

(b) in performance class 3 on a flight over water at a distance corresponding to more than three minutes flying time at normal cruising speed, shall be equipped with:

(1) in the case of a helicopter carrying less than 12 persons, at least one life-raft with a rated capacity of not less than the maximum number of persons on board, stowed so as to facilitate its ready use in an emergency;

(2) in the case of a helicopter carrying more than 11 persons, at least two life-rafts, stowed so as to facilitate their ready use in an emergency, sufficient together to accommodate all persons capable of being carried on board and, if one is lost, the remaining life-raft(s) having, the overload capacity sufficient to accommodate all persons on the helicopter;

(3) at least one survival ELT (ELT(S)) for each required life-raft; and

(4) life-saving equipment, including means of sustaining life, as appropriate to the flight to be undertaken.

CAT.IDE.H.305 Survival equipment

Helicopters operated over areas in which search and rescue would be especially difficult shall be equipped with:

(a) signalling equipment to make distress signals;

(b) at least one ELT(S); and

(c) additional survival equipment for the route to be flown taking account of the number of persons on board.

CAT.IDE.H.315 Helicopters certified for operating on water — miscellaneous equipment

Helicopters certified for operating on water shall be equipped with:

(a) a sea anchor and other equipment necessary to facilitate mooring, anchoring or manoeuvring the helicopter on water, appropriate to its size, mass and handling characteristics; and

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

CAT.IDE.H.320 All helicopters on flights over water — ditching

(a) Helicopters shall be designed for landing on water or certified for ditching in accordance with the relevant certification specification or equivalent airworthiness requirement acceptable to the CAAT when operated in performance class 1 or 2 on a flight over water in a hostile environment at a distance from land corresponding to more than 10 minutes flying time at normal cruise speed.

(b) Helicopters shall be designed for landing on water or certified for ditching in accordance the relevant certification specification or equivalent airworthiness requirement acceptable to the CAAT or fitted with emergency flotation equipment when operated in:

(1) performance class 1 or 2 on a flight over water in a non-hostile environment at a distance from land corresponding to more than 10 minutes flying time at normal cruise speed;

(2) performance class 2, when taking off or landing over water, except in the case of helicopter emergency medical services (HEMS) operations, where for the purpose of minimising exposure, the landing or take-off at a HEMS operating site located in a congested environment is conducted over water;

(3) performance class 3 on a flight over water beyond safe forced landing distance from land.

CAT.IDE.H.325 Headset

Whenever a radio communication and/or radio navigation system is required, helicopters shall be equipped with a headset with boom microphone or equivalent and a transmit button on the flight controls for each required pilot and/or crew member at his/her assigned station.

CAT.IDE.H.330 Radio communication equipment

(a) Helicopters shall be equipped with the radio communication equipment required by the applicable airspace requirements.

(b) The radio communication equipment shall provide for communication on the aeronautical emergency frequency 121.5 MHz.

(c) For operations where communication equipment is required to meet an RCP specification for performance-based communicatio (PBC), an helicopter shall be provided with communication equipment which will enable it to operate in accordance with the prescribed RCP specification(s)

CAT.IDE.H.335 Audio selector panel

Helicopters operated under IFR shall be equipped with an audio selector panel operable from each required flight crew member station.

CAT.IDE.H.340 Radio equipment for operations under VFR over routes navigated by reference to visual landmarks

Helicopters operated under VFR over routes that can be navigated by reference to visual landmarks shall be equipped with radio communication equipment necessary under normal radio propagation conditions to fulfil the following:

(a) communicate with appropriate ground stations;

(b) communicate with appropriate ATC stations from any point in controlled airspace within which flights are intended; and

(c) receive meteorological information.

CAT.IDE.H.345 Communication, navigation and surveillance equipment for operations under IFR or under VFR over routes not navigated by reference to visual landmarks

(a) Helicopters operated under IFR or under VFR over routes that cannot be navigated by reference to visual landmarks shall be equipped with radio communication, navigation and surveillance equipment in accordance with the applicable airspace requirements.

(b) Radio communication equipment shall include at least two independent radio communication systems necessary under normal operating conditions to communicate with an appropriate ground station from any point on the route, including diversions.

(c) Helicopters shall have sufficient navigation equipment to ensure that, in the event of the failure of one item of equipment at any stage of the flight, the remaining equipment shall allow safe navigation in accordance with the flight plan.

(d) Helicopters operated on flights in which it is intended to land in IMC shall be equipped with suitable equipment capable of providing guidance to a point from which a visual landing can be performed for each aerodrome at which it is intended to land in IMC and for any designated alternate aerodromes.

(e) For PBN operations the aircraft shall meet the airworthiness certification requirements for the appropriate navigation specification.

CAT.IDE.H.350 Transponder

Helicopters shall be equipped with a pressure altitude reporting secondary surveillance radar (SSR) transponder and any other SSR transponder capability required for the route being flown.

CAT.IDE.H.355 Management of aeronautical databases

(a) Aeronautical databases used on certified aircraft system applications shall meet data quality requirements that are adequate for the intended use of the data.

(b) The operator shall ensure the timely distribution and insertion of current and unaltered aeronautical databases to all aircraft that require them.

(c) Notwithstanding any other occurrence reporting requirements as defined in in the Kingdom of Thailand Civil Aviation Occurrence reporting Regulation, or other national provisions, the operator shall report to the database provider instances of erroneous, inconsistent or missing data that might be reasonably expected to constitute a hazard to flight.

In such cases, the operator shall inform flight crew and other personnel concerned, and shall ensure that the affected data is not used.

CAT.IDE.H.360 Surveillance Equipment

(a) An helicopter shall be provided with surveillance equipment which will enable it to operate in accordance with the requirements of air traffic services

(b) For operations where surveillance equipment is required to meet RSP specification for performance-based surveillance (PBS), an aeroplane shall, in addition to the requirement specified at (a):

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

สำนักงานการบินพลเรือนแห่งประเทศไทย
The Civil Aviation Authority of Thailand

Thailand Civil Aviation Regulation-Air Operations
Part Operations Requiring Specific Approvals
(TCAR OPS Part - SPA)

TCAR OPS Part - SPA

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Approved By

Suttipong Kongpool

Director General

The Civil Aviation Authority of Thailand

THAILAND CIVIL AVIATION REGULATION (TCAR)

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RECORD OF REVISIONS

Issue No.	Revision No.	Date (DD/MMM/YYYY)	Subject	Insert By (Department/ Division)
01	00	8 Dec 2023	Initial issue including (EU) No 2019/1387, (EU) No2018/1384, (EU) No 2019/1387, (EU) No 2020/2036, (EU) No 2021/1296, (EU) No 2021/2237, (EU) 2022/2203 and (EU) 2023/217, Notably, (EU) 2023/203 was not included.	OPS
02	00	20 Dec 2024	New Issue	OPS

REVISION HIGHLIGHTS

Area of Change	Change Detail(s)
New issue	New Issue

LIST OF EFFECTIVE PAGES

Change and amendment bar is placed against each paragraph affected.

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INTRODUCTION AND APPLICABILITY

In this publication the word 'must' or 'shall' is used to indicate where the Director General requires the Organisation, owner or operator to respond to and comply with, or adhere closely to, the defined requirement

If the Organisation's/owner's/operator's response is deemed to be inadequate by the Director General, a specific requirement or restriction may be applied as a condition of the appropriate instrument to be issued under Thailand Civil Aviation Regulations.

TCAR OPS is based on the latest consolidated version of Commission Regulation (EU) No 965/2012 of 5 October 2012 laying down technical requirements and administrative procedures related to air operations, as amended up to (EU) No 2023/217. Notably, (EU) 2023/203 was not included as part of the initial issue.

TCAR OPS Part SPA is a part of the overall TCAR OPS Regulation set.

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TABLE OF CONTENT

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SUBPART A: GENERAL REQUIREMENTS

SPA.GEN.100 The competent authority

(a) CAAT is the competent authority for issuing a specific approval:

(1) for commercial operator's which have their principal place of business in the Kingdom of Thailand;

(2) for the non-commercial operator, in the case whereby the operator is established or residing in the Kingdom of Thailand.

(b) Notwithstanding (a)(2), for the non-commercial operator using aircraft registered in a foreign country, the applicable requirements under TCAR OPS Part SPA for the approval of the following operations shall not apply if these approvals are issued by a third-country State of Registry:

(1) Performance-based navigation (PBN);

(2) Minimum operational performance specifications (MNPS);

(3) Reduced vertical separation minima (RVSM) airspace;

(4) Low visibility operations (LVO).

SPA.GEN.105 Application for a specific approval

(a) The operator applying for the initial issue of a specific approval shall provide to CAAT the documentation required in the applicable Subpart, together with the following information:

(1) the name, address and mailing address of the applicant;

(2) a description of the intended operation.

(b) The operator shall provide the following evidence to the CAAT:

(1) compliance with the requirements of the applicable Subpart;

(2) that the relevant elements defined in the mandatory part of the operational suitability data established in accordance with EASA Part 21 or any equivalent material acceptable to the CAAT are taken into account.

(c) The operator shall retain records relating to (a) and (b) at least for the duration of the operation requiring a specific approval, or, if applicable, in accordance with TCAR OPS Part ORO.

SPA.GEN.110 Privileges of an operator holding a specific approval

The scope of the activity that an operator is approved to conduct shall be documented and specified:

(a) for operators holding an air operator certificate (AOC) in the operations specifications to the AOC;

(b) for all other operators in the list of specific approvals.

SPA.GEN.115 Changes to a specific approval

When the conditions of a specific approval are affected by changes, the operator shall provide the relevant documentation to CAAT and obtain prior approval for the operation.

SPA.GEN.120 Continued validity of a specific approval

Specific approvals shall be issued for an unlimited duration and shall remain valid subject to the operator remaining in compliance with the requirements associated with the specific approval and taking into account the relevant elements defined in the mandatory part of the operational suitability data established in accordance with EASA, Part 21 or any equivalent material established in accordance with certification regulations acceptable to the CAAT.

SUBPART B: PERFORMANCE-BASED NAVIGATION (PBN) OPERATIONS

SPA.PBN.100 PBN operations

(a) An approval is required for each of the following PBN specifications:

(1) RNP AR APCH; and

(2) RNP 0.3 for helicopter operation.

(b) An approval for RNP AR APCH operations shall allow operations on public instrument approach procedures which meet the applicable ICAO procedure design criteria.

(c) A procedure-specific approval for RNP AR APCH or RNP 0.3 shall be required for private instrument approach procedures or any public instrument approach procedure that does not meet the applicable ICAO procedure design criteria, or where required by the Aeronautical Information Publication (AIP) or the CAAT.

SPA.PBN.105 PBN operational approval

To obtain a PBN specific approval from CAAT, the operator shall provide evidence that:

(a) the relevant airworthiness approval, suitable for the intended PBN operation, is stated in the AFM or other document that has been approved by the certifying authority as part of an airworthiness assessment or is based on such approval;

(b) a training programme for the flight crew members and relevant personnel involved in the flight preparation has been established;

(c) a safety assessment has been carried out;

(d) operating procedures have been established specifying:

(1) the equipment to be carried, including its operating limitations and appropriate entries in the minimum equipment list (MEL);

(2) flight crew composition, qualification and experience;

(3) normal, abnormal and contingency procedures; and

(4) electronic navigation data management;

(e) a list of reportable events has been specified; and

(f) a management RNP monitoring programme has been established for RNP AR APCH operations, if applicable.

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SUBPART C: OPERATIONS WITH SPECIFIED MINIMUM NAVIGATION PERFORMANCE (MNPS)

SPA.MNPS.100 MNPS operations

Aircraft shall only be operated in designated minimum navigation performance specifications (MNPS) airspace in accordance with regional supplementary procedures, where minimum navigation performance specifications are established, if the operator has been granted an approval by the CAAT to conduct such operations.

SPA.MNPS.105 MNPS operational approval

To obtain an MNPS operational approval from the CAAT, the operator shall provide evidence that:

(a) the navigation equipment meets the required performance;

(b) navigation displays, indicators and controls are visible and operable by either pilot seated at his/her duty station;

(c) a training programme for the flight crew members involved in these operations has been established;

(d) operating procedures have been established specifying:

(1) the equipment to be carried, including its operating limitations and appropriate entries in the MEL;

(2) flight crew composition and experience requirements;

(3) normal procedures;

(4) contingency procedures including those specified by the authority responsible for the airspace concerned;

(5) monitoring and incident reporting.

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SUBPART D: OPERATIONS IN AIRSPACE WITH REDUCED VERTICAL SEPARATION MINIMA (RVSM)

SPA.RVSM.100 RVSM operations

Aircraft shall only be operated in designated airspace where a reduced vertical separation minimum of 300 m (1000 ft) applies between flight level (FL) 290 and FL 410, inclusive, if the operator has been granted an approval by the CAAT to conduct such operations.

SPA.RVSM.105 RVSM operational approval

To obtain an RVSM operational approval from the CAAT, the operator shall provide evidence that:

(a) the RVSM airworthiness approval has been obtained;

(b) procedures for monitoring and reporting height-keeping errors have been established;

(c) a training programme for the flight crew members involved in these operations has been established;

(d) operating procedures have been established specifying:

(1) the equipment to be carried, including its operating limitations and appropriate entries in the MEL;

(2) flight crew composition and experience requirements;

(3) flight planning;

(4) pre-flight procedures;

(5) procedures prior to RVSM airspace entry;

(6) in-flight procedures;

(7) post-flight procedures;

(8) incident reporting;

(9) specific regional operating procedures.

SPA.RVSM.110 RVSM equipment requirements

Aircraft used for operations in RVSM airspace shall be equipped with:

(a) two independent altitude measurement systems;

(b) an altitude alerting system;

(c) an automatic altitude control system;

(d) a secondary surveillance radar (SSR) transponder with altitude reporting system that can be connected to the altitude measurement system in use for altitude control.

SPA.RVSM.115 RVSM height-keeping errors

(a) The operator shall report recorded or communicated occurrences of height-keeping errors caused by malfunction of aircraft equipment or of operational nature, equal to or greater than:

(1) a total vertical error (TVE) of ± 90 m (± 300 ft);

(2) an altimetry system error (ASE) of ± 75 m (± 245 ft); and

(3) an assigned altitude deviation (AAD) of ± 90 m (± 300 ft).

(b) Reports of such occurrences shall be sent to the CAAT within 72 hours. Reports shall include an initial analysis of causal factors and measures taken to prevent repeat occurrences.

(c) When height-keeping errors are recorded or received, the operator shall take immediate action to rectify the conditions that caused the errors and provide follow-up reports, if requested by the CAAT.

SUBPART E: LOW VISIBILITY OPERATIONS (LVO) and OPERATIONS WITH OPERATIONAL CREDITS

SPA.LVO.100 Low visibility operations and operations with operational credits

The operator shall conduct the following operations only if they are approved by the CAAT:

(a) take-off operations with visibility conditions of less than 400 m RVR;

(b) instrument approach operations in low-visibility conditions; and

(c) operations with operational credits, except for EFVS 200 operations, which shall not be subject to a specific approval.

SPA.LVO.105 Specific approval criteria

To obtain a specific approval as required by SPA.LVO.100, the operator shall demonstrate that:

(a) for low-visibility approach operations, LVTO operations in an RVR less than 125 m, and operations with operational credits, the aircraft has been certified for the intended operations;

(b) the flight crew members are competent to conduct the intended operation and a training and checking programme for the flight crew members and relevant personnel involved in the flight preparation has been established, in accordance with SPA.LVO.120;

(c) operating procedures for the intended operations have been established;

(d) any relevant changes to the minimum equipment list (MEL) have been made;

(e) any relevant changes to the maintenance programme have been made;

(f) procedures have been established to ensure the suitability of aerodromes, including instrument flight procedures, for the intended operations, in accordance with SPA.LVO.110; and

(g) for the intended operations, a safety assessment has been carried out, and performance indicators have been established to monitor the level of safety.

SPA.LVO.110 Aerodrome-related requirements, including instrument flight procedures

The operator shall ensure that only aerodromes, including instrument flight procedures, suitable for the intended operations are used for LVOs and operations with operational credits.

SPA.LVO.120 Flight crew competence

(a) The operator shall ensure that the flight crew is competent to conduct the intended operations.

(b) The operator shall ensure that each flight crew member successfully completes training and checking for all types of LVOs and operations with operational credits for which an approval has been granted. Such training and checking shall:

(1) include initial and recurrent training and checking;

(2) include normal, abnormal and emergency procedures;

(3) be tailored to the type of technologies used in the intended operations; and

(4) take into account the human factor risks associated with the intended operations.

(c) The operator shall keep records of the training and qualifications of the flight crew members.

(d) The training and checking shall be conducted by appropriately qualified personnel. In the case of flight and flight simulation training and checking, the personnel providing the training and conducting the checks shall be qualified in accordance withTCAR PEL Part FCL.

SPA.LVO.125 Operating procedures

(a) The operator shall establish procedures and instructions to be used for LVOs. These procedures and instructions shall be included in the operations manual or procedures manual and contain the duties of flight crew members during taxiing, take-off, approach, flare, landing, rollout and missed approach operations, as appropriate.

(b) Prior to commencing an LVO, the pilot-in-command/commander shall be satisfied that:

(1) the status of the visual and non-visual facilities is sufficient;

(2) appropriate LVPs are in force according to information received from air traffic services (ATS);

(3) flight crew members are properly qualified.

SPA.LVO.130 Minimum equipment

(a) The operator shall include the minimum equipment that has to be serviceable at the commencement of an LVO in accordance with the aircraft flight manual (AFM) or other approved document in the operations manual or procedures manual, as applicable.

(b) The pilot-in-command/commander shall be satisfied that the status of the aircraft and of the relevant airborne systems is appropriate for the specific operation to be conducted.

SUBPART F: EXTENDED DIVERSION TIME OPERATIONS (EDTO)

SPA.EDTO.100 ETOPS

In commercial air transport operations, two-engined aeroplanes shall only be operated beyond the threshold distance determined in accordance with CAT.OP.MPA.140 if the operator has been granted an EDTO operational approval for ETOPS by the CAAT.

SPA.EDTO.101 EDTO by aeroplanes with more than two turbine engines

In commercial air transport operations, aeroplanes with more than two turbine engines shall only be operated beyond the threshold distance from an adequate en-route alternate determined in accordance with CAT.OP.MPA.141 only if the operator has been granted an EDTO operational approval by the CAAT.

SPA.EDTO.105 ETOPS operational approval

To obtain an EDTO operational approval for ETOPs operations with an aeroplane with two engines from the CAAT, the operator shall provide evidence that:

(a) the aeroplane/engine combination holds an ETOPS type design and reliability approval for the intended operation;

(b) a training programme for the flight crew members and all other operations personnel involved in these operations has been established and the flight crew members and all other operations personnel involved are suitably qualified to conduct the intended operation;

(c) the operator's organisation and experience are appropriate to support the intended operation;

(d) operating procedures have been established.

(e) An ETOPs maintenance programme have been established.

On issuing the specific approval for extended diversion time operations, the maximum diversion time granted to the operator for each particular aeroplane and engine combination shall be specified by the CAAT.

SPA.EDTO.110 EDTO operational approval for aeroplanes with more than two turbine engines

To obtain an EDTO operational approval for EDTO operations other than ETOPs from the CAAT, the operator shall provide evidence that:

(a) the most limiting EDTO significant system time limitation, if any, indicated in the Aeroplane Flight Manual (directly or by reference) and relevant to that particular operation is not exceeded;

(b) training programme for the flight crew members and all other operations personnel involved in these operations has been established and the flight crew members and all other operations personnel involved are suitably qualified to conduct the intended operation;

(c) the operator's organisation and experience are appropriate to support the intended operation;

(d) operating procedures have been established.

Notwithstanding the provisions in first paragraph; the CAAT may, based on the results of a specific safety risk assessment conducted by the operator which demonstrates how an equivalent level of safety will be maintained, approve operations beyond the time limits of the most time-limited system. The specific safety risk assessment shall include at least the:

(a) Capabilities of the operator;

(b) Overall reliability of the aeroplane;

(c) Reliability of each time limited system;

(d) Relevant information from the aeroplane manufacturer; and

(e) Specific mitigation measures.

On issuing the specific approval for extended diversion time operations, the maximum diversion time granted to the operator for each particular aeroplane and engine combination shall be specified by the CAAT.

SPA.EDTO.115 EDTO en-route alternate aerodrome

(a) An EDTO en-route alternate aerodrome shall be considered adequate, if, at the expected time of use, the aerodrome is available and equipped with necessary ancillary services such as air traffic services (ATS), sufficient lighting, communications, weather reporting, navigation aids and emergency services and has at least one instrument approach procedure available.

(b) Prior to conducting an EDTO flight, the operator shall ensure that an EDTO en-route alternate aerodrome is available, within either the operator's approved diversion time, or a diversion time based on the MEL generated serviceability status of the aeroplane, whichever is shorter.

(c) The operator shall specify any required EDTO en-route alternate aerodrome(s) in the operational flight plan and ATS flight plan.

SPA.EDTO.120 EDTO en-route alternate aerodrome planning minima

(a) The operator shall only select an aerodrome as an EDTO en-route alternate aerodrome when the appropriate weather reports or forecasts, or any combination thereof, indicate that, between the anticipated time of landing until one hour after the latest possible time of landing, conditions will exist at or above the planning minima calculated by adding the additional limits of Table 1.

(b) The operator shall include in the operations manual the method for determining the operating minima at the planned EDTO en-route alternate aerodrome.

Table 1 Planning minima for the EDTO en-route alternate aerodrome

Type of approach	Planning minima
Precision approach	DA/H + 200 ft RVR/VIS + 800 m[(1)]
Non-precision approach or Circling approach	MDA/H + 400 ft[(1)] RVR/VIS + 1500 m
[(1)] VIS: visibility; MDA/H: minimum descent altitude/height.	

SPA.EDTO.125 Additional fuel

For aeroplanes engaged in EDTO, the additional fuel required by CAT.OP.MPA.181 shall include the fuel necessary to comply with the EDTO critical fuel scenario as established by the CAAT.

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SUBPART G: TRANSPORT OF DANGEROUS GOODS

SPA.DG.100 Transport of dangerous goods

Except as provided for in TCAR OPS Part CAT, TCAR OPS Part NCC, TCAR OPS Part NCO and TCAR OPS Part SPO, the operator shall only transport dangerous goods by air if the operator has been approved by the CAAT.
The operator shall conduct in according with the regulation on The Civil Aviation Authority of Thailand No.4 on Transportation of Dangerous Goods by Air

SPA.DG.105 Approval to transport dangerous goods

To obtain the approval to transport dangerous goods, the operator shall in accordance with the technical instructions:

(a) establish and maintain a training programme for all personnel involved and demonstrate to the CAAT that adequate training has been given to all personnel;

(b) establish operating procedures to ensure the safe handling of dangerous goods at all stages of air transport, containing information and instructions on:

(1) the operator's policy to transport dangerous goods;

(2) the requirements for acceptance, handling, loading, stowage and segregation of dangerous goods;

(3) actions to take in the event of an aircraft accident or incident when dangerous goods are being carried;

(4) the response to emergency situations involving dangerous goods;

(5) the removal of any possible contamination;

(6) the duties of all personnel involved, especially with relevance to ground handling and aircraft handling;

(7) inspection for damage, leakage or contamination;

(8) dangerous goods accident and incident reporting.

SPA.DG.110 Dangerous goods information and documentation

The operator shall, in accordance with the technical instructions:

(a) provide written information to the pilot-in-command/commander:

(1) about dangerous goods to be carried on the aircraft;

(2) for use in responding to in-flight emergencies;

(b) use an acceptance checklist;

(c) ensure that dangerous goods are accompanied by the required dangerous goods transport document(s), as completed by the person offering dangerous goods for air transport, except when the information applicable to the dangerous goods is provided in electronic form;

(d) ensure that where a dangerous goods transport document is provided in written form, a copy of the document is retained on the ground where it will be possible to obtain access to it within a reasonable period until the goods have reached their final destination;

(e) ensure that a copy of the information to the pilot-in-command or the commander is retained on the ground and that that copy, or the information contained in it, is readily accessible to the flight operations officer, flight dispatcher, or the designated ground personnel responsible for their part of the flight operations, until after the completion of the flight to which the information refers;

(f) retain the acceptance checklist, transport document and information to the pilot-in-command/commander for at least three months after completion of the flight;

(g) retain the training records of all personnel for at least three years.

SUBPART H: HELICOPTER OPERATIONS WITH NIGHT VISION IMAGING SYSTEMS

SPA.NVIS.100 Night vision imaging system (NVIS) operations

(a) Helicopters shall only be operated under VFR at night with the aid of NVIS if the operator has been approved by the CAAT.

(b) To obtain such approval by the CAAT, the operator shall:

(1) operate in commercial air transport (CAT) and hold a CAT AOC in accordance with TCAR OPS Part ORO;

(2) demonstrate to the CAAT:

(i) compliance with the applicable requirements contained in this Subpart;

(ii) the successful integration of all elements of the NVIS.

SPA.NVIS.110 Equipment requirements for NVIS operations

(a) Before conducting NVIS operations each helicopter and all associated NVIS equipment shall have been issued with the relevant airworthiness approval in accordance with EASA Part 21 or any equivalent material acceptable to the CAAT.

(b) *Radio altimeter*. The helicopter shall be equipped with a radio altimeter capable of emitting an audio warning below a pre-set height and an audio and visual warning at a height selectable by the pilot, instantly discernible during all phases of NVIS flight.

(c) *Aircraft NVIS compatible lighting*. To mitigate the reduced peripheral vision cues and the need to enhance situational awareness, the following shall be provided:

(1) NVIS-compatible instrument panel flood-lighting, if installed, that can illuminate all essential flight instruments;

(2) NVIS-compatible utility lights;

(3) portable NVIS compatible flashlight; and

(4) a means for removing or extinguishing internal NVIS non-compatible lights.

(d) *Additional NVIS equipment*. The following additional NVIS equipment shall be provided:

(1) a back-up or secondary power source for the night vision goggles (NVG);

(2) a helmet with the appropriate NVG attachment.

(e) All required NVGs on an NVIS flight shall be of the same type, generation and model.

(f) Continuing airworthiness

(1) Procedures for continuing airworthiness shall contain the information necessary for carrying out ongoing maintenance and inspections on NVIS equipment installed in the helicopter and shall cover, as a minimum:

(i) helicopter windscreens and transparencies;

(ii) NVIS lighting;

(iii) NVGs; and

(iv) any additional equipment that supports NVIS operations.

(2) Any subsequent modification or maintenance to the aircraft shall be in compliance with the NVIS airworthiness approval.

SPA.NVIS.120 NVIS operating minima

(a) Operations shall not be conducted below the weather minima for the type of night operations being conducted.

(b) The operator shall establish the minimum transition height from where a change to/from aided flight may be continued.

SPA.NVIS.130 Crew requirements for NVIS operations

(a) *Selection*. The operator shall establish criteria for the selection of crew members for the NVIS task.

(b) *Experience*. The minimum experience for the commander shall not be less than 20 hours VFR at night as pilot-in-command/commander of a helicopter before commencing training.

(c) *Operational training*. All pilots shall have completed the operational training in accordance with the NVIS procedures contained in the operations manual.

(d) *Recency*. All pilots and NVIS technical crew members conducting NVIS operations shall have completed three NVIS flights in the last 90 days. Recency may be re-established on a training flight in the helicopter or an approved full flight simulator (FFS), which shall include the elements of (f)(1).

(e) *Crew composition*. The minimum crew shall be the greater of that specified:

(1) in the aircraft flight manual (AFM);

(2) for the underlying activity; or

(3) in the operational approval for the NVIS operations.

(f) Crew training and checking

(1) Training and checking shall be conducted in accordance with a detailed syllabus approved by the CAAT and included in the operations manual.

(2) Crew members

(i) Crew training programmes shall: improve knowledge of the NVIS working environment and equipment; improve crew coordination; and include measures to minimise the risks associated with entry into low visibility conditions and NVIS normal and emergency procedures.

(ii) The measures referred to in (f)(2)(i) shall be assessed during:

(A) night proficiency checks; and

(B) line checks.

SPA.NVIS.140 Information and documentation

The operator shall ensure that, as part of its risk analysis and management process, risks associated with the NVIS environment are minimised by specifying in the operations manual: selection, composition and training of crews; levels of equipment and dispatch criteria; and operating procedures and minima, such that normal and likely abnormal operations are described and adequately mitigated.

SUBPART I: HELICOPTER HOIST OPERATIONS

SPA.HHO.100 Helicopter hoist operations (HHO)

(a) Helicopters shall only be operated for the purpose of CAT hoist operations if the operator has been approved by the CAAT.

(b) To obtain such approval by the CAAT, the operator shall:

(1) operate in CAT and hold a CAT AOC in accordance with TCAR OPS Part ORO;

(2) demonstrate to the CAAT compliance with the requirements contained in this Subpart.

SPA.HHO.110 Equipment requirements for HHO

(a) The installation of all helicopter hoist equipment other than a simple PCDS, including any radio equipment to comply with point SPA.HHO.115, and any subsequent modifications, shall have an airworthiness approval appropriate to the intended function. Ancillary equipment shall be designed and tested to the appropriate standard as required by the CAAT.

(b) Maintenance instructions for HHO equipment and systems shall be established by the operator in liaison with the manufacturer and included in the operator's helicopter maintenance programme.

SPA.HHO.115 HHO communication

Two-way radio communication shall be established with the organisation for which the HHO is being provided and, where possible, a means of communicating with ground personnel at the HHO site for:

(a) day and night offshore operations;

(b) night onshore operations, except for HHO at a helicopter emergency medical services (HEMS) operating site.

SPA.HHO.125 Performance requirements for HHO

Except for HHO at a HEMS operating site, HHO shall be capable of sustaining a critical engine failure with the remaining engine(s) at the appropriate power setting without hazard to the suspended person(s)/cargo, third parties or property.

SPA.HHO.130 Crew requirements for HHO

(a) *Selection*. The operator shall establish criteria for the selection of flight crew members for the HHO task, taking previous experience into account.

(b) *Experience*. The minimum experience level for the commander conducting HHO flights shall not be less than:

(1) Offshore:

(i) 1000 hours as pilot-in-command/commander of helicopters, or 1000 hours as co-pilot in HHO of which 200 hours is as pilot-in-command under supervision; and

(ii) 50 hoist cycles conducted offshore, of which 20 cycles shall be at night if night operations are being conducted, where a hoist cycle means one down-and-up cycle of the hoist hook.

(2) Onshore:

(i) 500 hours as pilot-in-command/commander of helicopters, or 500 hours as co-pilot in HHO of which 100 hours is as pilot-in-command under supervision;

(ii) 200 hours operating experience in helicopters gained in an operational environment similar to the intended operation; and

(iii) 50 hoist cycles, of which 20 cycles shall be at night if night operations are being conducted.

(c) Operational training and experience. Successful completion of training in accordance with the HHO procedures contained in the operations manual and relevant experience in the role and environment under which HHO are conducted.

(d) Recency. All pilots and HHO crew members conducting HHO shall have completed in the last 90 days:

(1) when operating by day: any combination of three day or night hoist cycles, each of which shall include a transition to and from the hover;

(2) when operating by night: three night hoist cycles, each of which shall include a transition to and from the hover.

(e) Crew composition. The minimum crew for day or night operations shall be as stated in the operations manual. The minimum crew will be dependent on the type of helicopter, the weather conditions, the type of task, and, in addition for offshore operations, the HHO site environment, the sea state and the movement of the vessel. In no case shall the minimum crew be less than one pilot and one HHO crew member.

(f) Training and checking

(1) Training and checking shall be conducted in accordance with a detailed syllabus approved by the CAAT and included in the operations manual.

(2) Crew members:

(i) Crew training programmes shall: improve knowledge of the HHO working environment and equipment; improve crew coordination; and include measures to minimise the risks associated with HHO normal and emergency procedures and static discharge.

(ii) The measures referred to in (f)(2)(i) shall be assessed during visual meteorological conditions (VMC) day proficiency checks, or VMC night proficiency checks when night HHO are undertaken by the operator.

SPA.HHO.135 HHO passenger briefing

Prior to any HHO flight, or series of flights, HHO passengers shall have been briefed and made aware of the dangers of static electricity discharge and other HHO considerations.

SPA.HHO.140 Information and documentation

(a) The operator shall ensure that, as part of its risk analysis and management process, risks associated with the HHO environment are minimised by specifying in the operations manual: selection, composition and training of crews; levels of equipment and dispatch criteria; and operating procedures and minima, such that normal and likely abnormal operations are described and adequately mitigated.

(b) Relevant extracts from the operations manual shall be available to the organisation for which the HHO is being provided.

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SUBPART J: HELICOPTER EMERGENCY MEDICAL SERVICE OPERATIONS

SPA.HEMS.100 Helicopter emergency medical service (HEMS) operations

(a) Helicopters shall only be operated for the purpose of HEMS operations if the operator has been approved by the CAAT.

(b) To obtain such approval by the CAAT, the operator shall:

(1) operate in CAT and hold a CAT AOC in accordance with TCAR OPS Part ORO;

(2) demonstrate to the CAAT compliance with the requirements contained in this Subpart.

SPA.HEMS.110 Equipment requirements for HEMS operations

The installation of all helicopter dedicated medical equipment and any subsequent modifications and, where appropriate, its operation shall be approved in accordance with EASA Part 21 or any equivalent material acceptable to the CAAT.

SPA.HEMS.115 Communication

In addition to that required by CAT.IDE.H, helicopters conducting HEMS flights shall have communication equipment capable of conducting two-way communication with the organisation for which the HEMS is being conducted and, where possible, to communicate with ground emergency service personnel.

SPA.HEMS.120 HEMS operating minima

(a) HEMS flights operated in performance class 1 and 2 shall comply with the weather minima in Table 1 for dispatch and en-route phase of the HEMS flight. In the event that during the en-route phase the weather conditions fall below the cloud base or visibility minima shown, helicopters certified for flights only under VMC shall abandon the flight or return to base. Helicopters equipped and certified for instrument meteorological conditions (IMC) operations may abandon the flight, return to base or convert in all respects to a flight conducted under instrument flight rules (IFR), provided the flight crew are suitably qualified.

Table 1	
HEMS operating minima	
2 PILOTS	
DAY	
Ceiling	Visibility
500 ft and above	As defined by the applicable airspace VFR minima
499 - 400 ft	1000 m(*)
399 - 300 ft	2 000 m

(*) During the en-route phase visibility may be reduced to 800 m for short periods when in sight of land if the helicopter is manoeuvred at a speed that will give adequate opportunity to observe any obstacles in time to avoid a collision.

(b) The weather minima for the dispatch and en-route phase of a HEMS flight operated in performance class 3 shall be a cloud ceiling of 600 ft and a visibility of 1500 m. Visibility may be reduced to 800 m for short periods when in sight of land if the helicopter is manoeuvred at a speed that will give adequate opportunity to observe any obstacle and avoid a collision.

SPA.HEMS.125 Performance requirements for HEMS operations

(a) Performance class 3 operations shall not be conducted over a hostile environment.

(b) Take-off and landing

(1) Helicopters conducting operations to/from a final approach and take-off area (FATO) at a hospital that is located in a congested hostile environment and that is used as a HEMS operating base shall be operated in accordance with performance class 1.

(2) Helicopters conducting operations to/from a FATO at a hospital that is located in a congested hostile environment and that is not a HEMS operating base shall be operated in accordance with performance class 1, except when the operator holds an approval in accordance with CAT.POL.H.225.

(3) Helicopters conducting operations to/from a HEMS operating site located in a hostile environment shall be operated in accordance with performance class 2 and be exempt from the approval required by CAT.POL.H.305(a), provided compliance is shown with CAT.POL.H.305(b)(2) and (b)(3).

(4) The HEMS operating site shall be big enough to provide adequate clearance from all obstructions. For night operations, the site shall be illuminated to enable the site and any obstructions to be identified.

SPA.HEMS.130 Crew requirements

(a) *Selection*. The operator shall establish criteria for the selection of flight crew members for the HEMS task, taking previous experience into account.

(b) *Experience*. The minimum experience level for the commander conducting HEMS flights shall not be less than:

(1) either:

(i) 1 000 hours as pilot-in-command/commander of aircraft of which 500 hours are as pilot-in-command/commander on helicopters; or

(ii) 1 000 hours as co-pilot in HEMS operations of which 500 hours are as pilot-in-command under supervision and 100 hours pilot-in-command/commander of helicopters;

(2) 500 hours' operating experience in helicopters, gained in an operational environment similar to the intended operation; and

(c) Operational training. Successful completion of operational training in accordance with the HEMS procedures contained in the operations manual.

(d) Recency. All pilots conducting HEMS operations shall have completed a minimum of 30 minutes' flight by sole reference to instruments in a helicopter or in an FSTD within the last six months.

(e) Crew composition

(1) Day flight. The minimum crew shall be two pilots.

(2) Night flight is prohibited.

(f) Crew training and checking

(1) Training and checking shall be conducted in accordance with a detailed syllabus approved by the CAAT and included in the operations manual.

(2) Crew members

(i) Crew training programmes shall: improve knowledge of the HEMS working environment and equipment; improve crew coordination; and include measures to minimise the risks associated with en-route transit in low visibility conditions, selection of HEMS operating sites and approach and departure profiles.

(ii) The measures referred to in (f)(2)(i) shall be assessed during:

(A) VMC day proficiency checks,

(B) line checks.

SPA.HEMS.135 HEMS medical passenger and other personnel briefing

(a) *Medical passenger*. Prior to any HEMS flight, or series of flights, medical passengers shall have been briefed to ensure that they are familiar with the HEMS working environment and equipment, can operate on-board medical and emergency equipment and can take part in normal and emergency entry and exit procedures.

(b) *Ground emergency service personnel*. The operator shall take all reasonable measures to ensure that ground emergency service personnel are familiar with the HEMS working environment and equipment and the risks associated with ground operations at a HEMS operating site.

(c) *Medical patient*. Notwithstanding CAT.OP.MPA.170, a briefing shall only be conducted if the medical condition makes this practicable.

SPA.HEMS.140 Information and documentation

(a) The operator shall ensure that, as part of its risk analysis and management process, risks associated with the HEMS environment are minimised by specifying in the operations manual: selection, composition and training of crews; levels of equipment and dispatch criteria; and operating procedures and minima, such that normal and likely abnormal operations are described and adequately mitigated.

(b) Relevant extracts from the operations manual shall be made available to the organisation for which the HEMS is being provided.

SPA.HEMS.145 HEMS operating base facilities

(a) If crew members are required to be on standby with a reaction time of less than 45 minutes, dedicated suitable accommodation shall be provided close to each operating base.

(b) At each operating base the pilots shall be provided with facilities for obtaining current and forecast weather information and shall be provided with satisfactory communications with the appropriate air traffic services (ATS) unit. Adequate facilities shall be available for the planning of all tasks.

SPA.HEMS.150 Fuel/energy supply – alleviation

As an alternative to points CAT.OP.MPA.191 (b), (c), and (d), when the helicopter emergency medical services (HEMS) mission is conducted under visual flight rules (VFR) within a local and defined geographical area, the fuel/energy policy shall ensure that on completion of the mission, the final reserve fuel/energy is sufficient for:

(a) 30-minute flying time at best-range speed; or

(b) 20-minute flying time at best-range speed by day, when operating within an area providing continuous and suitable operating sites.';

SPA.HEMS.155 Refuelling with passengers on board

A refuelling procedure with either rotors stopped or rotors turning shall be provided in accordance with point CAT.OP.MPA.200 'Special refuelling or defuelling of the aircraft.

SUBPART K: HELICOPTER OFFSHORE OPERATIONS

SPA.HOFO.100 Helicopter offshore operations (HOFO)

The requirements of this Subpart apply to:

(a) a commercial air transport operator holding a valid AOC in accordance with Part ORO;

(b) a specialised operations operator having been authorised by the Civil Aviation Authority of the Kingdom of Thailand, in accordance with Kingdom of Thailand Civil Aviation Regulations and the CAAT internal oversight, certification and enforcement procedures; or

(c) a non-commercial operator having been authorised by the Civil Aviation Authority of the Kingdom of Thailand, in accordance with Kingdom of Thailand Civil Aviation Regulations and the CAAT internal oversight, certification and enforcement procedures.

SPA.HOFO.105 Approval for helicopter offshore operations

(a) Prior to engaging in operations under this Subpart, a specific approval by the CAAT shall have been issued to the operator.

(b) To obtain such approval, the operator shall submit an application to the CAAT as specified in SPA.GEN.105, and shall demonstrate compliance with the requirements of this Subpart.

(c) The operator shall, prior to performing operations in a State outside of Thailand seek the approval of the CAAT before the start of the intended operations

SPA.HOFO.110 Operating procedures

(a) The operator shall, as part of its safety management process, mitigate and minimise risks and hazards specific to helicopter offshore operations. The operator shall specify in the operations manual the:

(1) selection, composition and training of crews;

(2) duties and responsibilities of crew members and other involved personnel;

(3) required equipment and dispatch criteria; and

(4) operating procedures and minima, such that normal and likely abnormal operations are described and adequately mitigated.

(b) The operator shall ensure that:

(1) an operational flight plan is prepared prior to each flight;

(2) the passenger safety briefing also includes any specific information on offshore related items and is provided prior to boarding the helicopter;

(3) each member of the flight crew wears an approved survival suit:

(i) when the weather report or forecasts available to the pilot-in-command/commander indicate that the sea temperature will be less than plus 10°C during the flight; or

(ii) when the estimated rescue time exceeds the calculated survival time; or

(iii) when the flight is planned to be conducted at night in a hostile environment;

(4) where established, the offshore route structure provided by the appropriate ATS is followed;

(5) pilots make optimum use of the automatic flight control systems (AFCS) throughout the flight;

(6) specific offshore approach profiles are established, including stable approach parameters and the corrective action to be taken if an approach becomes unstable;

(7) for multi-pilot operations, procedures are in place for a member of the flight crew to monitor the flight instruments during an offshore flight, especially during approach or departure, to ensure that a safe flight path is maintained;

(8) the flight crew takes immediate and appropriate action when a height alert is activated;

(9) procedures are in place to require the emergency flotation systems to be armed, when safe to do so, for all overwater arrivals and departures; and

(10) operations are conducted in accordance with any restriction on the routes or the areas of operation specified by the CAAT or the appropriate authority responsible for the airspace.

SPA.HOFO.115 Use of offshore locations

The operator shall only use offshore locations that are suitable in relation to size and mass of the type of helicopter and to the operations concerned.

SPA.HOFO.120 Selection of aerodromes and operating sites

(a) Onshore destination alternate aerodrome. Notwithstanding points CAT.OP.MPA.192, NCC.OP.152 and SPO.OP.151, the pilot-in command/commander does not need to specify a destination alternate aerodrome in the operational flight plan when conducting flights from an offshore location to a land destination aerodrome provided that sufficient operational contingency is in place to ensure a safe return from offshore.

(b) Offshore destination alternate helideck. The operator may select an offshore destination alternate helideck when all of the following criteria are met:

(1) An offshore destination alternate helideck shall be used only after the point of no return (PNR) and when an onshore destination alternative aerodrome is not geographically available. Prior to the PNR, an onshore destination alternate aerodrome shall be used.

(2) One engine inoperative (OEI) landing capability shall be attainable at the offshore destination alternate helideck.

(3) To the extent possible, helideck availability shall be guaranteed prior to PNR. The dimensions, configuration and obstacle clearance of individual helidecks or other sites shall be suitable for its use as an alternate helideck by each helicopter type intended to be used.

(4) Weather minima shall be established taking into account the accuracy and reliability of meteorological information.

(5) The MEL shall contain specific provisions for this type of operation.

(6) An offshore destination alternate helideck shall only be selected if the operator has established a procedure in the operations manual.

SPA.HOFO.125 Offshore standard approach procedures (OSAPs)

(a) An operator shall establish procedures to ensure that offshore standard approach procedures (OSAPs) are followed only if:

(1) the helicopter is capable of providing navigation and real-time obstacle environment information for obstacle clearance; and

(2) either:

(i) the minimum descent height (MDH) is determined from a radio altimeter or a device that provides equivalent performance; or

(ii) the minimum descent altitude (MDA) is applied and it includes an adequate margin.

(b) If the operator follows OSAPs to rigs or vessels in transit, the flight shall be conducted in multi-pilot operations.

(c) The decision range shall provide adequate obstacle clearance in the missed approach from any destination for which an OSAP is planned.

(d) The approach shall only be continued beyond decision range or below the minimum descent altitude/height (MDA/H) when visual reference to the destination has been established.

(e) For single-pilot operations, appropriate increments shall be added to the MDA/H and decision range.

(f) When an OSAP is followed to a non-moving offshore location (i.e. fixed installation or moored vessel) and a reliable GNSS position for the location is available in the navigation system, the GNSS/area navigation system shall be used to enhance the safety of the OSAP.

(g) The operator shall include OSAPs in its initial and recurrent training and checking programmes

SPA.HOFO.130 Meteorological conditions

Notwithstanding CAT.OP.MPA.247, NCC.OP.180 and SPO.OP.170, when flying between offshore locations located in class G airspace where the overwater sector is less than 10 NM, VFR flights may be conducted when the limits are at, or better than, the following:

Minima for flying between offshore locations located in class G airspace

	Day		Night	
	Height*	**Visibility**	**Height***	**Visibility**
Single pilot	300 feet	3 km	500 feet	5 km
Two pilots	300 feet	2 km**	500 feet	5 km***

* The cloud base shall allow flight at the specified height to be below and clear of cloud.

** Helicopters may be operated in flight visibility down to 800 m, provided the destination or an intermediate structure is continuously visible.

*** Helicopters may be operated in flight visibility down to 1 500 m, provided the destination or an intermediate structure is continuously visible.

SPA.HOFO.135 Wind limitations for operations to offshore locations

Operation to an offshore location shall only be performed when the wind speed at the helideck is reported to be not more than 60 knots including gusts.

SPA.HOFO.140 Performance requirements at offshore locations

Helicopters taking off from and landing at offshore locations shall be operated in accordance with the performance requirements of the appropriate TCAR OPS regulation according to their type of operation.

SPA.HOFO.145 Flight data monitoring (FDM) system

(a) When conducting CAT operations with a helicopter equipped with a flight data recorder, the operator shall establish and maintain a FDM system, as part of its integrated management system, by 1 January 2019.

(b) The FDM system shall be non-punitive and contain adequate safeguards to protect the source(s) of the data.

SPA.HOFO.150 Aircraft tracking system

An operator shall establish and maintain a monitored aircraft tracking system for offshore operations in a hostile environment from the time the helicopter departs until it arrives at its final destination.

SPA.HOFO.155 Vibration health monitoring (VHM) system

(a) The following helicopters conducting CAT offshore operations in a hostile environment shall be fitted with a VHM system capable of monitoring the status of critical rotor and rotor drive systems by 1 January 2019:

(1) complex motor powered helicopters first issued with an individual Certificate of Airworthiness (CofA) after 31 December 2016;

(2) all helicopters with a maximum operational passenger seating configuration (MOPSC) of more than 9 and first issued with an individual CofA before 1 January 2017;

(3) all helicopters first issued with an individual CofA after 31 December 2018.

(b) The operator shall have a system to:

(1) collect the data including system generated alerts;

(2) analyse and determine component serviceability; and

(3) respond to detected incipient failures.

SPA.HOFO.160 Equipment requirements

(a) The operator shall comply with the following equipment requirements:

(1) Public Address (PA) system in helicopters used for CAT and non-commercial operations with complex motor-powered helicopters (NCC):

(i) Helicopters with a maximum operational passenger seat configuration (MOPSC) of more than 9 shall be equipped with a PA system.

(ii) Helicopters with an MOPSC of 9 or less need not be equipped with a PA system if the operator can demonstrate that the pilot's voice is understandable at all passengers' seats in flight.

(2) Radio altimeter

Helicopters shall be equipped with a radio altimeter that is capable of emitting an audio warning below a pre-set height and a visual warning at a height selectable by the pilot.

(b) *Emergency exits*

All emergency exits, including crew emergency exits, and any door, window or other opening that is suitable for emergency egress, and the means for opening them shall be clearly marked for the guidance of occupants using them in daylight or in the dark. Such markings shall be designed to remain visible if the helicopter is capsized or the cabin is submerged.

(c) Helicopter terrain awareness warning system (HTAWS)

Helicopters used in CAT operations with a maximum certificated take-off mass of more than 3 175 kg or a MOPSC of more than 9 and first issued with an individual CofA after 31 December 2018 shall be equipped with an HTAWS that meets the requirements for class A equipment as specified in an acceptable standard.

SPA.HOFO.165 Additional procedures and equipment for operations in a hostile environment

(a) *Life jackets*

Approved life jackets shall be worn at all times by all persons on board unless integrated survival suits that meet the combined requirement of the survival suit and life jacket are worn.

(b) *Survival suits*

All passengers on board shall wear an approved survival suit:

(1) when the weather report or forecasts available to the commander/pilot-in-command indicate that the sea temperature will be less than plus 10 °C during the flight; or

(2) when the estimated rescue time exceeds the calculated survival time; or

(3) when the flight is planned to be conducted at night.

(c) *Emergency breathing system*

All persons on board shall carry and be instructed in the use of emergency breathing systems.

(d) *Life rafts*

(1) All life rafts carried shall be installed so as to be usable in the sea conditions in which the helicopter's ditching, flotation, and trim characteristics were evaluated for certification.

(2) All life rafts carried shall be installed so as to facilitate their ready use in an emergency.

(3) The number of life rafts installed:

(i) in the case of a helicopter carrying less than 12 persons, at least one life raft with a rated capacity of not less than the maximum number of persons on board; or

(ii) in the case of a helicopter carrying more than 11 persons, at least two life rafts, sufficient together to accommodate all persons capable of being carried on board and, if one is lost, the remaining life raft(s) having the overload capacity sufficient to accommodate all persons on the helicopter.

(4) Each life raft shall contain at least one survival emergency locator transmitter (ELT(S)); and

(5) Each life raft shall contain life-saving equipment, including means of sustaining life, as appropriate to the flight to be undertaken.

(e) *Emergency cabin lighting*

The helicopter shall be equipped with an emergency lighting system with an independent power supply to provide a source of general cabin illumination to facilitate the evacuation of the helicopter.

(f) *Automatically deployable emergency locator transmitter (ELT(AD))*

The helicopter shall be equipped with an ELT(AD) that is capable of transmitting simultaneously on 121,5 MHz and 406 MHz.

(g) *Securing of non-jettisonable doors*

Non-jettisonable doors that are designated as ditching emergency exits shall have a means of securing them in the open position so that they do not interfere with the occupants' egress in all sea conditions up to the maximum sea conditions required to be evaluated for ditching and flotation.

(h) *Emergency exits and escape hatches*

All emergency exits, including crew emergency exits, and any door, window or other opening suitable to be used for the purpose of underwater escape shall be equipped so as to be operable in an emergency.

(i) Notwithstanding (a), (b) and (c) above the operator may, based on a risk assessment, allow passengers, medically incapacitated at an offshore location, to partly wear or not wear life jackets, survival suits or emergency breathing systems on return flights or flights between offshore locations.

SPA.HOFO.170 Crew requirements

(a) The operator shall establish:

(1) criteria for the selection of flight crew members, taking into account the flight crew members' previous experience;

(2) a minimum experience level for a commander/pilot-in-command intending to conduct offshore operations; and

(3) a flight crew training and checking programme that each flight crew member shall complete successfully. Such programme shall be adapted to the offshore environment and include normal, abnormal and emergency procedures, crew resource management, water entry and sea survival training.

(b) *Recency requirements*

A pilot shall only operate a helicopter carrying passengers:

(1) at an offshore location, as commander or pilot-in-command, or co-pilot, when he or she has carried out in the preceding 90 days at least 3 take-offs, departures, approaches and landings at an offshore location in a helicopter of the same type or a full flight simulator (FFS) representing that type; or

(2) by night at an offshore location, as commander or pilot-in-command, or co-pilot, when he/she has carried out in the preceding 90 days at least 3 take-offs, departures, approaches and landings at night at an offshore location in a helicopter of the same type or an FFS representing that type.

The 3 take-offs and landings shall be performed in either multi-pilot or single-pilot operations, depending on the operation to be performed.

(c) Specific requirements for CAT:

(1) The 90-day period presented in points (b)(1) and (2) above may be extended to 120 days as long as the pilot undertakes line flying under the supervision of a type rating instructor or examiner.

(2) If the pilot does not comply with the requirements in (1), he/she shall complete a training flight in the helicopter or an FFS of the helicopter type to be used, which shall include at least the requirements described in (b)(1) and (2) before he or she can exercise his or her privileges.

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SUBPART L: SINGLE-ENGINED TURBINE AEROPLANE OPERATIONS AT NIGHT OR IN INSTRUMENT METEOROLOGICAL CONDITIONS (SET-IMC)

SPA.SET-IMC.100 SET-IMC operations

In commercial air transport (CAT) operations, single-engined turbine aeroplanes shall only be operated at night or in IMC if the operator has been granted a SET-IMC approval by the CAAT.

SPA.SET-IMC.105 SET-IMC operations approval

To obtain a SET-IMC approval by the CAAT, the operator shall provide evidence that all the following conditions have been complied with:

(a) an acceptable level of turbine engine reliability is achieved in service by the world fleet for the particular airframe-engine combination;

(b) specific maintenance instructions and procedures to ensure the intended levels of continued airworthiness and reliability of the aeroplane and its propulsion system have been established and included in the operator's aircraft maintenance programme as specified in applicable continuing airworthiness requirements, including all of the following:

(1) an engine trend monitoring programme, except for aeroplanes first issued with an individual certificate of airworthiness after 31 December 2004 that have an automatic trend monitoring system;

(2) a propulsion and associated systems' reliability programme;

(c) flight crew composition and a training/checking programme for the flight crew members involved in these operations have been established;

(d) operating procedures have been established specifying all the following:

(1) the equipment to be carried, including its operating limitations and appropriate entries in the MEL;

(2) the flight planning;

(3) the normal procedures;

(4) the contingency procedures, including procedures following a propulsion system failure, as well as forced landing procedures in all weather conditions;

(5) the monitoring and incident reporting.

(e) a safety risk assessment has been performed, including the determination of an acceptable risk period if an operator intends to make use of it.

SPA.SET-IMC.110 Equipment requirements for SET-IMC operations

Aeroplanes used for SET-IMC operations shall be equipped with all the following equipment:

(a) two separate electrical generating systems, each one capable of supplying adequate power to all essential flight instruments, navigation systems and aeroplane systems required for continued flight to the destination or alternate aerodrome;

(b) two attitude indicators, powered from independent sources;

(c) for passenger operations, a shoulder harness or a safety belt with a diagonal shoulder strap for each passenger seat;

(d) airborne weather-detecting equipment;

(e) in a pressurised aeroplane, sufficient supplemental oxygen for all occupants to allow descent, following engine failure at the maximum certificated cruising altitude, at the best range gliding speed and in the best gliding configuration, assuming the maximum cabin leak rate, until sustained cabin altitudes below 13 000 ft are reached;

(f) an area navigation system capable of being programmed with the positions of landing sites and providing lateral guidance to the flight crew to reach those sites;

(g) a radio altimeter;

(h) a landing light, capable of illuminating the touchdown point on the power-off glide path from 200 ft away;

(i) an emergency electrical supply system of sufficient capacity and endurance capable of providing power, following the failure of all generated power, to additional loads necessary for all of the following:

(1) the essential flight and area navigation instruments during descent from maximum operating altitude after engine failure;

(2) the means to provide for one attempt to restart the engine;

(3) if appropriate, the extension of landing gear and flaps;

(4) the use of the radio altimeter throughout the landing approach;

(5) the landing light;

(6) one pitot heater;

(7) if installed, the electrical means to give sufficient protection against impairment of the pilot's vision for landing;

(j) an ignition system that activates automatically, or is capable of being operated manually, for take-off, landing, and during flight, in visible moisture;

(k) a means of continuously monitoring the power train lubrication system to detect the presence of debris associated with the imminent failure of a drivetrain component, including a flight crew compartment caution indication;

(l) an emergency engine power control device that permits continuing operation of the engine at a sufficient power range to safely complete the flight in the event of any reasonably probable failure of the fuel/energy control unit.

SUBPART M: ELECTRONIC FLIGHT BAGS (EFB)

SPA.EFB.100 Use of electronic flight bags (EFBs) — operational approval

(a) A commercial air transport operator shall only use a type B EFB application if the operator has been granted an approval by the CAAT for such use.

(b) In order to obtain an operational approval from the CAAT for the use of a type B EFB application, the operator shall provide evidence that:

(1) a risk assessment related to the use of the EFB device that hosts the application and to the EFB application and its associated function(s) has been conducted, identifying the associated risks and ensuring that they are appropriately managed and mitigated;

(2) the human–machine interfaces of the EFB device and the EFB application have been assessed against human factors principles;

(3) it has established an EFB administration system and that procedures and training requirements for the administration and use of the EFB device and the EFB application have been established and implemented; these shall include procedures for:

(i) operating the EFB;

(ii) the management of changes to the EFB;

(iii) the management of EFB data;

(iv) EFB maintenance; and

(v) EFB security;

(4) the EFB host platform is suitable for the intended use of the EFB application.

This demonstration shall be specific to the EFB application and the EFB host platform on which the application is installed.

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SUBPART N: HELICOPTER POINT-IN-SPACE APPROACHES AND DEPARTURES WITH REDUCED VFR MINIMA (PINS-VFR)

SPA.PINS-VFR.100 Helicopter point-in-space (PinS) approaches and departures with reduced VFR minima

(a) The operator shall only use reduced VFR operating minima if the operator has been granted an approval by the CAAT.

(b) Reduced VFR operating minima shall apply only to a helicopter flight that includes a segment flown under IFR, and only in one of the following cases:

(1) the segment of the flight flown under VFR takes place immediately after a helicopter PinS approach with the intention of landing at a nearby heliport or operating site;

(2) the segment of the flight flown under VFR takes place immediately after a helicopter PinS approach with the intention of conducting hoist operations at a nearby HEC or HHO site;

(3) the segment of the flight flown under VFR is a departure with the intention of transitioning to IFR at a nearby initial departure fix.

(c) The operator shall define operating procedures that are applicable when flying with reduced VFR operating minima.

(d) The operator shall ensure that the flight crew members are experienced and trained to operate with reduced VFR operating minima.

สำนักงานการบินพลเรือนแห่งประเทศไทย
The Civil Aviation Authority of Thailand

Thailand Civil Aviation Regulation - Air Operations Part Cabin Crew (TCAR OPS Part - CC)

TCAR OPS Part - CC

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Approved By

Suttipong Kongpool

Director General

The Civil Aviation Authority of Thailand

THAILAND CIVIL AVIATION REGULATION (TCAR)

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RECORD OF REVISIONS

Issue No.	Revision No.	Date (DD/MMM/YYYY)	Subject	Insert By (Department/ Division)
01	00	20 Dec 2024	New Issue	OPS

REVISION HIGHLIGHTS

Area of Change	Change Detail(s)
New Issue	New Issue

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INTRODUCTION AND APPLICABILITY

In this publication the word 'must' or 'shall' is used to indicate where the Director General requires the individual applicant or operator to respond to and comply with, or adhere closely to, the defined requirement.

If the applicant or operator's response is deemed to be inadequate by the Director General, a specific requirement or restriction may be applied as a condition of the appropriate instrument to be issued under Thailand Civil Aviation Regulations.

This TCAR OPS Part CC is adapted from The European Union Aircrew Regulation (EU) No 1178/2011, through this regulation, allows cabin crew initial training, and the related knowledge and competencies gained by the cabin crew member, to be granted credit and be transferable among the operators in the Kingdom of Thailand. This approach is based on the issuance to each cabin crew member of a cabin crew initial training certificate that is recognized among the operators in the Kingdom of Thailand.

To ensure the transferability of the initial training, the programme does not include any training elements that are specific to individual operators. Those training elements must be covered by cabin crew trainees when completing the training provided by individual operators, e.g. aircraft type specific training and operator conversion training, differences training, etc.

TCAR OPS Part CC is a part of the overall TCAR OPS Regulation set.

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SUBPART GEN - GENERAL REQUIREMENTS

CC.GEN.001 Competent authority

For the purpose of this Part, the competent authority shall be the Civil Aviation Authority of Thailand (CAAT).

CC.GEN.005 Scope

This Part establishes the requirements for the issue of cabin crew initial training certificate and the conditions for their validity and use by their holders.

CC.GEN.010 Definitions

The term of 'Cabin crew attestation' used in TCAR OPS means a cabin crew initial training certificate as used in this part.

CC.GEN.020 Minimum age

The applicant for a cabin crew initial training certificate shall be at least 18 years of age.

CC.GEN.025 Privileges and conditions

(a) The privileges of holders of a cabin crew initial training certificate are to act as cabin crew members in commercial air transport operation with aircraft.

(b) Cabin crew members may exercise the privileges specified in (a) only if they:

(1) hold a valid cabin crew initial training certificate; and

(2) comply with CC.GEN.030, CC.TRA.225 and the applicable medical requirements.

CC.GEN.030 Documents and record-keeping

To show compliance with the applicable requirements as specified in CC.GEN.025(b), each holder shall keep, and provide upon request, the cabin crew initial training certificate, and the training and checking records of his/her aircraft type or variant qualification(s), unless the operator employing his/her services keeps such records and can make them readily available upon request by the CAAT, another civil aviation authority or by the holder.

SUBPART CCC - SPECIFIC REQUIREMENTS FOR THE CABIN CREW INITIAL TRAINING CERTIFICATE (CCC)

CC.CCC.100 Issue of the cabin crew initial training certificate

(a) Cabin crew initial training certificates shall only be issued to applicants who have passed the examination following completion of the initial training course in accordance with this Part.

(b) Cabin crew initial training certificates shall be issued by a commercial air transport operator and/or the operators, who approved by the CAAT to deliver initial cabin crew training and to issue cabin crew initial training certificates.

(c) Cabin crew initial training certificates as referred to in (a) and (b) shall contain the following information;

- A statement declaring that the initial training certificates is issued in accordance with TCAR OPS Part CC
- Reference Number (TH-YYYY-AOC-XXXXXX): State of issue – Year of initial completion - AOC ICAO Code - Employee or Reference number according to a code established by the issuing body
- Full name of holder
- Date and place of birth of holder
- Nationality of holder
- Signature of holder
- The official name, address of the operator issuing the CC initial training certificate and the stamp or logo
- Full name and signature of the authorised person issuing the CC initial training certificate
- Date of issue (DD/MMM/YYYY)
- A statement as follows: “The holder may only exercise the privileges to act as a cabin crew member on aircraft engaged in commercial air transport operations if he/she complies with the requirements contained in TCAR OPS Part CC for continuous fitness and valid aircraft type qualifications.”

CC.CCC.105 Validity of the cabin crew initial training certificate

The cabin crew initial training certificate shall be issued with unlimited duration and shall remain valid unless its holder has not exercised the associated privileges during the preceding 60 months on at least one aircraft type.

SUBPART TRA - TRAINING REQUIREMENTS FOR CABIN CREW INITIAL TRAINING CERTIFICATE APPLICANTS AND HOLDERS

CC.TRA.215 Provision of training

Training required in this Part shall be:

(a) provided by commercial air transport operators and/or the operators, approved to do so by the competent authority;

(b) performed by personnel suitably experienced and qualified for the training elements to be covered; and

(c) conducted according to a training programme and syllabus approved by the CAAT.

CC.TRA.220 Initial training course and examination

(a) Applicants for a cabin crew initial training certificate shall complete an initial training course to familiarise themselves with the aviation environment and to acquire sufficient general knowledge and basic proficiency required to perform the duties and discharge the responsibilities related to the safety of passengers and flight during normal, abnormal and emergency operations.

(b) The programme of the initial training course shall cover at least the elements specified in Appendix 1 to this Part. It shall include theoretical and practical training.

(c) Applicants for a cabin crew initial training certificate shall undergo an examination covering all elements of the training programme specified in (b), except CRM training, to demonstrate that they have attained the level of knowledge and proficiency required in (a).

CC.TRA.225 Aircraft type or variant qualification(s)

(a) Holders of a valid cabin crew initial training certificate shall only operate on an aircraft if they are qualified in accordance with the applicable requirements of TCAR OPS Part ORO.

(b) To be qualified for an aircraft type or a variant, the holder:

(1) shall comply with the applicable training, checking and validity requirements, covering as relevant to the aircraft to be operated:

(i) aircraft-type specific training, operator conversion training and familiarisation;

(ii) differences training;

(iii) recurrent training; and

(2) shall have operated within the preceding 6 months on the aircraft type, or shall have completed the relevant training and checking before operating again on that aircraft type.

SUBPART TRC - REQUIREMENTS FOR CABIN CREW INSTRUCTORS/EVALUATORS

CC.TRC.300 Qualifications of cabin crew instructors/evaluators

(a) Instructors/Evaluators providing theoretical and/or practical training on Safety and Emergency Procedures (SEP) and aero-medical aspects and first aid for cabin crew shall have minimum qualifications as follows:

(1) Have five years' experience as a crew member or previous experience as a safety training instructor or hold or have held an appropriate aero-medical qualification; and

(2) Have a thorough knowledge and pass theoretical and/or practical assessment of competence in the appropriate aircraft category to demonstrate the ability to instruct and train to the level required by the operators for the issuance of relevant certificate or internal record of approval; and

(3) Have ability to fulfill the operators' cabin crew training policy and standards; and

(4) Have completely received training in accordance with the applicable requirements of this Part to efficiently cover the duties and responsibilities to be performed. The training elements for instructors/evaluators shall include but not limit to:

(i) The fundamental principles of the teaching and learning process;

(ii) Elements of effective teaching;

(iii) Teaching methods and procedures;

(iv) Student evaluation and testing procedures;

(v) Course development;

(vi) Lesson planning;

(vii) Facilitation skills; and

(viii) Classroom training techniques.

(5) Have observed one classroom to the training subject related to their application and have conducted one classroom under supervision of the operator's qualified and suitable to assess personnel their ability to conduct the class effectively.

(6) An applicant without the experience requirement specified in (a)(1) but with other relevant aviation experience or appropriate qualifications may still be considered for appointment subject to the operator's consideration, assessment, selection and approval process. Such appointment process shall be reported to authority for acknowledgement either by a separate document or a part of the operator's training manual.

(b) Instructors providing theoretical training for Crew Resource Management (CRM) aspects shall meet TCAR OPS Part ORO for CRM instructor.

(c) Instructors providing theoretical training for in-flight security aspect shall meet the National Civil Aviation Security Training Programme (NCASTP) requirements and be as a CAAT approved instructor.

(d) Instructors providing theoretical training for dangerous goods aspect shall meet TCAR OPS Part SPA AMCs & GM, Subpart G Transport of Dangerous Goods, AMC1 SPA.DG.105(a) Approval to transport Dangerous Goods, Training Programme (b) for Dangerous Goods instructor.

CC.TRC.305 Supervision of Cabin crew instructors/evaluators

(a) All cabin crew instructors and evaluators specified in CC.TRC.300 (a) shall receive recurrent training and checking and undergo a periodic performance review annually to ensure their competency and standardisation with respect to delegated tasks by using assessment process acceptable to the CAAT, implemented by the operator.

(b) The operator shall maintain the following records of their instructors and evaluator:

(1) Qualifications and training records;

(2) Training classes observed and conducted;

(3) Examinations received and conducted;

(4) Checks as carried out by the authorised personnel;

(5) Records of performance review; and

(6) Licenses and/or certificates in accordance with regulatory requirements.

Appendix 1 to Part CC - Initial training course - TRAINING PROGRAMME

The training programme of the initial training course shall include at least the following:

1. General theoretical knowledge of aviation and aviation regulations

This shall cover all elements relevant to the duties and responsibilities required from cabin crew:

1.1. aviation terminology, theory of flight, passenger distribution, areas of operation, meteorology and effects of aircraft surface contamination;

1.2. aviation regulations relevant to cabin crew and the role of the CAAT;

1.3. duties and responsibilities of cabin crew during operations and the need to respond promptly and effectively to emergency situations;

1.4 continuing competence and medical fitness to operate as a cabin crew member, including as regards flight and duty time limitations and rest requirements;

1.5. the importance of ensuring that relevant documents and manuals are kept up-to-date, with amendments provided by the operator as applicable;

1.6. the importance of cabin crew performing their duties in accordance with the operations manual of the operator;

1.7. the importance of the cabin crew's pre-flight briefing and the provision of necessary safety information with regards to their specific duties; and

1.8. the importance of identifying when cabin crew members have the authority and responsibility to initiate an evacuation and other emergency procedures.

2. Communication

During training, emphasis shall be placed on the importance of effective communication between cabin crew and flight crew, including communication techniques, common language and terminology.

3. Introductory course on human factors (HF) in aviation and crew resource management (CRM)

This course shall be conducted by at least one cabin crew CRM instructor. The training elements shall be covered in depth and shall include at least the following:

3.1. General: human factors in aviation, general instructions on CRM principles and objectives, human performance and limitations;

3.2. Relevant to the individual cabin crew member: personality awareness, human error and reliability, attitudes and behaviours, self-assessment; stress and stress management; fatigue and vigilance; assertiveness; situation awareness, information acquisition and processing.

3.3 Training shall include information on flight time limitations, the effects of operating for extended periods of time and the effects of time zone changes. Human performance and limitations shall include illness, use of alcohol and drugs, blood donations etc. Advice shall be given on general health care, especially whilst operating overseas, and the need for preventive medicine such as immunisation, when operating to potentially infected areas.

4. Passenger handling and cabin surveillance

4.1. The importance of correct seat allocation with reference to aeroplane mass and balance, special categories of passengers and the necessity of seating able-bodied passengers adjacent to unsupervised exits;

4.2. Rules covering the safe stowage of cabin baggage and cabin service items and the risk of it becoming a hazard to occupants of the passenger compartment or otherwise obstruction or damaging emergency equipment or exits;

4.3. Advice on the recognition and management of passengers who are, or become, intoxicated with alcohol or are under the influence of drugs or are aggressive;

4.4. Precautions to be taken when live animals are carried in the passenger compartment;

4.5. Duties to be undertaken in the event of turbulence, including securing the passenger compartment; and

4.6. Methods used to motivate passengers and the crowd control necessary to expedite an emergency evacuation.

5. Aero-medical aspects and first-aid

5.1. General instruction on aero-medical aspects and survival;

5.2. The physiological effects of flying with particular emphasis on hypoxia, oxygen requirements, Eustachian tubal function and barotraumas;

5.3. Basic first-aid, including care of:

a) air sickness;
b) gastro-intestinal disturbances;
c) hyperventilation;
d) burns;
e) wounds;
f) the unconscious; and
g) fractures and soft tissue injuries;

5.4. In-flight medical emergencies and associated first-aid covering at least:

a) asthma;
b) stress and allergic reactions;
c) shock;
d) diabetes;
e) choking;
f) epilepsy;
g) childbirth;
h) stroke; and
i) heart attack;

5.5. The use of appropriate equipment including first-aid oxygen, first-aid kits and emergency medical kits and their contents;

5.6. Practical cardio-pulmonary resuscitation training by each cabin crew member using a specifically designed dummy and taking account of the characteristics of an aircraft environment; and

5.7. Travel health and hygiene, including:

a) hygiene on board;
b) risk of contact with infectious diseases and means to reduce such risks;
c) handling of clinical waste;
d) aircraft disinsection;
e) handling of death on board; and
f) alertness management, physiological effects of fatigue, sleep physiology, circadian rhythm and time zone changes.

6. Dangerous goods in accordance with the applicable ICAO Technical Instructions.

7. General security aspects in aviation

This shall include awareness of the provisions laid down in security regulations, including in the National Civil Aviation Security Training Programme (NCASTP).

8. Fire and smoke training

8.1. Emphasis on the responsibility of cabin crew to deal promptly with emergencies involving fire and smoke and, in particular, emphasis on the importance of identifying the actual source of the fire;

8.2. The importance of informing the flight crew immediately, as well as the specific actions necessary for coordination and assistance, when fire or smoke is discovered;

8.3. The necessity for frequent checking of potential fire-risk areas including toilets, and the associated smoke detectors;

8.4. The classification of fires and the appropriate type of extinguishing agents and procedures for particular fire situations;

8.5. The techniques of application of extinguishing agents, the consequences of misapplication, and of use in a confined space including practical training in fire-fighting and in the donning and use of smoke protection equipment used in aviation; and

8.6. The general procedures of ground-based emergency services at aerodromes.

9. Survival training

9.1. Principles of survival in hostile environments (e.g. polar, desert, jungle, sea); and

9.2. Water survival training which shall include the actual donning and use of personal flotation equipment in water and the use of slide-rafts or similar equipment, as well as actual practice in water.

Appendix 2 to Part CC – Examination for Issuance of a cabin crew initial training certificate

(a) The examination for the issuance of the cabin crew initial training certificate consists of a theoretical test and a practical test on the knowledge programme defined in TCAR OPS Part CC.

(b) Applicants shall have received the necessary training before to be authorised to attempt the corresponding examination.

(c) The theoretical knowledge examinations shall be done in written or computer-based form and shall cover all aspects of the theoretical knowledge training. It shall focus on the quality of the examination to ensure each cabin crew trainee acquires both knowledge and skills of the competency requirements.

To pass, the applicant shall obtain at least a score of 80%. No point shall be awarded for a wrong answer, for no answer or for several answers to the same question.

(d) To be admitted to the practical test, the applicant shall have passed the theoretical knowledge part of the training.

(e) The practical test shall allow to verify the applicant's ability to ensure passengers safety efficiently and effectively, particularly through the use of various safety equipment and by performing passenger rescue and assistance exercises, demonstrating proficiency in using different materials and performing tasks in an aquatic environment.

A clear rating methodology and evaluation criteria for cabin crew performance shall be developed, including specific success criteria for each practical test.