



Public Authority for Civil Aviation

CAR-77

Civil Aviation Regulation

Manned Balloon Operations

Effective 31st Jan 2019

Approved by: HE Dr. Mohamed bin Nasser Al-Zaabi (CEO)

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Corrigendum of Amendments

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| 01 | All Pages | This is a new Civil Aviation Regulation |
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Glossary of Terms or Abbreviations

The following terms or acronyms may be used in any manual or document published by PACA. Reproduction in part or whole is allowed without prior approval. The Document Control Office reserves the rights to include such a listing in any PACA manual or document prior to publishing.

| | |
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| ACAS | Airborne Collision Avoidance System |
| ACC | Area Control Centre |
| ACCID | Accident |
| ADREP | Accident/Incident Reporting System |
| AFIS | Aerodrome Flight Information Service |
| AFTN | Aeronautical Fixed Telecommunication Network |
| AIC | Aeronautical Information Circular |
| AIP | Aeronautical Information Publication |
| AIS | Aeronautical Information Service |
| A/C | Aircraft |
| AGL | Above Ground Level |
| AltMoC | Alternative Means of Compliance |
| AMSL | Above Mean Sea Level |
| AOC | Air Operator Certificate |
| APP | Approach Control Office |
| ARO | Air Traffic Services Reporting Office |
| ATC | Air Traffic Control |
| ATS | Air Traffic Service |
| CAR | Civil Aviation Regulation |
| CFMU | Central Flow Management Unit |
| COM | Communications/Equipment |
| ELT | Emergency Locator Transmitter |
| FIC | Flight Information Centre |
| FIS | Flight Information Service |
| GM | Guidance Material |
| IATA | International Air Transport Association |
| ICAO | International Civil Aviation Organisation |
| IIC | Investigator in Charge |
| INCID | Serious Incident |
| ISA | International standard atmosphere |
| Minister | Minister of Transport and Communications |
| NOTAM | Notice to Airmen |
| NPA | Notice of Proposed Amendment |
| OTSB | Oman Transport Safety Bureau |
| PL | Policy Lead |
| RCC | Rescue Co-ordination Centre of the Sultanate |
| RNAV | Area Navigation |
| SAR | Search and Rescue |
| SIGMET | Significant Meteorological Report |
| SRA | Surveillance Radar Approach |
| SSR | Secondary Surveillance Radar |
| TCAS | Traffic Alert and Collision Avoidance System |
| TL | Technical Lead |
| UTC | Universal Time Coordinated |
| VHF | Very High Frequency |
| WX | Weather |

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FOREWORD

- (a) Enforcement Procedures ensuring compliance against Civil Aviation Regulation have been issued by the Public Authority for Civil Aviation of Oman (hereinafter referred as PACA or “the Authority”) under the provisions of the Civil Aviation Law of the Sultanate of Oman.
- (b) CAR-77 prescribes the requirements for:
 - (1) The authorised issuance of a certificate to operate manned balloons;
 - (2) The operation and maintenance of certified manned balloons;
 - (3) The applicable punitive actions that can be enforced by the Authority against recognised actions of non-compliance.
- (c) Amendments to the text in CAR-77 in revised editions are issued as a complete amendment of pages contained within.
- (d) The editing practices used in this document are as follows:
 - (1) ‘Shall’ is used to indicate a mandatory requirement and may appear in CARs.
 - (2) ‘Should’ is used to indicate a recommendation
 - (3) ‘May’ is used to indicate discretion by the Authority, or the industry as appropriate.
 - (4) ‘Will’ indicates a mandatory requirement and is used to advise of action incumbent on the Authority.

Note: The use of the male gender implies the female gender and vice versa.

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Article 1 – Subject matter and scope

- (1) This Regulation lays down detailed regulation for air operations with balloons, where such aircraft meet the conditions laid down Regulation.
- (2) This Regulation does not apply to air operations with tethered gas balloons.

Article 2 – Definitions

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

- (1) 'balloon' means a manned lighter-than-air aircraft which is not power-driven and sustains flight through the use of either a lighter-than-air gas or an airborne heater, including gas balloons, hot-air balloons, mixed balloons and, although power-driven, hot-air airships;
- (2) 'gas balloon' means a free balloon that derives its lift from a lighter-than-air gas;
- (3) 'tethered gas balloon' means a gas balloon with a tether system that continuously anchors the balloon to a fixed point during operation;
- (4) 'free balloon' means a balloon that is not continuously anchored to a fixed point during operation;
- (5) 'hot-air balloon' means a free balloon that derives its lift from heated air;
- (6) 'mixed balloon' means a free balloon that derives its lift from a combination of heated air and a lighter-than-air, non-flammable gas;
- (7) 'hot-air airship' means a power-driven hot-air balloon, whereby the engine does not create any portion of lift;
- (8) 'competition flight' means any air operation with a balloon performed for the purposes of participating in air races or contests, including practicing for such an operation and flying to and from air races or contests;
- (9) 'flying display' means any air operation with a balloon performed for the purposes of providing an exhibition or entertainment at an advertised event open to the public, including practicing for such an operation and flying to and from the advertised event;
- (10) 'introductory flight' means any air operation against remuneration or other valuable consideration consisting of an air tour of short duration for the purpose of attracting new trainees or new members, performed either by a training organisation approved in accordance with Authority Regulation
- (11) 'principal place of business' means the head office or registered office of the operator of the balloon within which the principal financial functions and operational control of the activities referred to in this Regulation are exercised;
- (12) 'dry lease agreement' means an agreement between undertakings pursuant to which the balloon is operated under the responsibility of the lessee.

Article 3 – Air operations

- (1) Operators of balloons shall operate the balloon in accordance with the requirements set out in this CAR and within the scope of their privileges.
- (2) Those operators shall be entitled to engage in commercial operations after having declared to the authority their capacity and means to discharge the responsibilities associated with the operation of the balloon. They shall make that declaration and operate the balloon, in the requirements set out in this CAR.

Article 4 – Waiver or exemption

- (1) Waiver or exemption may be issued by the Authority (PACA) to any technical requirements contained in this Regulation under this Article, providing that, such a waiver or exemption shall only be applicable to that particular technical requirement. When such waiver or exemption is granted, it shall be deemed to have been issued under the Civil Aviation Law and in accordance with the established regulations and ensuing procedures.
- (2) For the purpose of this Article, no waiver or exemption shall be granted to any provisions pertaining to offences, violations or acts committed against any mandatory provisions of the Civil Aviation Law and from those that prescribed enforcements and penalties.
- (3) No waiver or exemption shall be granted to any provision or requirements of this Regulation that may invalidate any international treaties or bilateral agreements entered into by the Sultanate of Oman.

Article 5 – Amendment and revision

- (1) Revision may be made by the Authority to the technical requirements and administrative procedures contained in this Regulation resulting from any future International Standards changes in the related Annexes in ICAO that the Authority may adopt.
- (2) When such revision is made, the Authority shall ensure that the aeronautical industry shall be made aware of such revision in accordance with the Civil Aviation Regulation Change Procedures or process that the Authority may establish.
- (3) By derogation from paragraph 1 and 2, the Authority may however, amend, revise, supersede, revoke or cancel this Regulation or in whole in accordance with established Civil Aviation Regulation Change Procedures.

Article 6 – Certificate of registration and Airworthiness requirements

- (1) All commercial balloons shall be registered in PACA Civil Aviation Aircraft Registry and Certificate of Airworthiness shall be issued.
- (2) All Certificates of balloon registration and certificate of airworthiness shall be issued in accordance with the respective PACA regulations.
- (3) Respective fees shall be paid for the issue of C of R and C of A.

SUB PART A – GENERAL

DEFINITIONS

For the purposes of this CAR, the following specific definitions shall apply in addition to the CAR 1.

- (1) 'Acceptable Means of Compliance (AMC)' means non-binding standards adopted by the Authority to illustrate means to establish compliance with Regulation and its implementing rules;
- (2) 'Alternative Means of Compliance (AltMoC)' means those means that propose an alternative to an existing AMC or those that propose new means to establish compliance with Regulation and its implementing rules for which no associated AMC have been adopted by the Authority;
- (3) 'pilot-in-command' means the pilot designated as being in command and charged with the safe conduct of the flight;
- (4) 'Crew-member' means a person assigned by an operator to perform duties on board the balloon or, where the duties are directly related to the operation of the balloon, on the ground;
- (5) 'Flight crew-member' means a licensed crew-member charged with duties essential to the operation of an aircraft during a flight duty period;
- (6) 'psychoactive substances' means alcohol, opioids, cannabinoids, sedatives and hypnotics, cocaine, other psychostimulants, hallucinogens and volatile solvents, excluding coffee and tobacco;
- (7) 'accident' means an occurrence associated with the operation of a balloon which takes place between the moment of the commencement of the inflation of the balloon and the moment of complete deflation of the balloon, in which:
 - (a) a person suffers fatal or serious injuries as a result of being in the balloon or as a result of direct contact with any part of the balloon, including parts which have become detached from the balloon, but excluding any injuries arising from natural causes or which are self-inflicted or inflicted by other persons;
 - (b) the balloon sustains damage or structural failure which adversely affects its structural strength, performance or flight characteristics and requires major repair or replacement of the affected component; or
 - (c) the balloon is missing or is completely inaccessible;
- (1) 'incident' means an occurrence, other than an accident, associated with the operation of a balloon which affects or could affect the safety of its operation;
- (2) 'serious incident' means an occurrence associated with the operation of the balloon which takes place between the moment of the commencement of the inflation of the balloon and the moment of complete deflation of the balloon, in which there was a high probability of an accident;
- (3) 'critical phases of flight' means take-off, final approach, missed approach, landing and any other phases of a flight which the pilot-in-command determines as critical for the safe operation of the balloon;
- (4) 'aircraft flight manual (AFM)' means the document containing the applicable and approved operating limitations and information with respect to the balloon;
- (5) 'dangerous goods' means articles or substances which are capable of posing a risk to health, safety, property or the environment and which are shown in the list of dangerous goods in the technical instructions or which are to be classified as such in accordance with those instructions;
- (6) 'technical instructions' means the latest applicable edition of the 'Technical instructions for the safe transport of dangerous goods by air', including the supplement and any addenda, published by ICAO in document 9284-AN/ 905;
- (7) 'operating site' means a site selected by the pilot-in-command or the operator for landing, take-off or external load operations;
- (8) 'refuelling' means the refilling of fuel cylinders or fuel tanks from an external source, excluding the replacement of fuel cylinders;

- (9) 'night' means the period between the end of evening civil twilight and the beginning of morning civil twilight. Civil twilight ends in the evening when the centre of the sun's disc is 6 degrees below the horizon and begins in the morning when the centre of the sun's disc is 6 degrees below the horizon;
- (10) 'balloon specialised operation' means any operation, which can be commercial or non-commercial, with a balloon the main purpose of which is not the carriage of passengers for sightseeing or experience flights, but parachute operations, hang-gliding dropping, flying displays, competition flights or similar specialised activities;
- (11) 'traffic load' means the total mass of passengers, baggage and carry-on specialist equipment;
- (12) 'balloon empty mass' means the mass determined by weighing the balloon with all the installed equipment as specified in the AFM;
- (13) 'wet lease agreement' means an agreement between operators pursuant to which the balloon is operated under the responsibility of the lessor;
- (14) 'commercial passenger ballooning' (CPB) means a form of commercial air transport operation with a balloon whereby passengers are carried on sightseeing or experience flights for remuneration or other valuable consideration;
- (15) 'commercial air transport (CAT) operation' means an aircraft operation to transport passengers, cargo or mail for remuneration or other valuable consideration.

SUBPART B — BALLOON AIR OPERATIONS

BASIC OPERATIONAL REQUIREMENTS

Section 1 – General Requirements

CAR 77.001 Scope

In accordance with Article 3, this Subpart establishes the requirements to be met by any operator of balloons.

CAR 77.005 Authority

The authority shall be the Public Authority for Civil Aviation

CAR 77.010 Demonstration of Compliance

- (a) An operator shall, when so requested by the authority which is verifying continued compliance by the operator demonstrate compliance with the essential requirements set out in the requirements of this Regulation.
- (b) The operator shall use either of the following means to demonstrate such compliance:
 - (1) acceptable means of compliance (AMC);
 - (2) alternative means of compliance (AltMoC).

CAR 77.015 Introductory Flights

Introductory flights shall be:

- (a) Operated under visual flight rules (VFR) by day; and
- (b) Overseen as regards their safety by a person who has been nominated by the organisation performing the introductory flights.

CAR 77.020 Immediate Reactions to a Safety Problem

The operator shall implement:

- (a) Safety measures mandated by the authority in accordance with the implemented Regulation
- (b) Airworthiness directives and other mandatory information issued by the design authority

CAR 77.025 Designation as Pilot-in-Command

The operator shall designate a pilot-in-command who is qualified to act as pilot-in-command in accordance with CAR FCL.

CAR 77.030 Responsibilities of the Pilot-in-Command

- (a) The pilot-in-command shall:
 - (1) be responsible for the safety of the balloon and of any person or property carried therein during balloon operations;

- (2) be responsible for the initiation, continuation or termination of a flight in the interest of safety;
 - (3) ensure that all applicable operational procedures and checklists are complied with;
 - (4) only commence a flight if he or she is satisfied that all operational limitations are complied with, as follows:
 - i. the balloon is airworthy;
 - ii. the balloon is duly registered;
 - iii. instruments and equipment required for the execution of the flight are carried on board the balloon and are operative;
 - iv. the mass of the balloon is such that the flight can be conducted within the limits defined by the AFM;
 - v. all equipment and baggage are properly loaded and secured; and
 - vi. the operating limitations of the balloon as specified in the AFM will not be exceeded at any time during the flight;
 - (5) ensure that the pre-flight inspection has been carried out as required by Regulation
 - (6) be responsible for the pre-flight briefing of persons assisting in the inflation and deflation of the envelope;
 - (7) ensure that persons assisting in the inflation and deflation of the envelope wear appropriate protective clothing;
 - (8) be satisfied that relevant emergency equipment remains easily accessible for immediate use;
 - (9) ensure that no person is smoking on board or within the direct vicinity of the balloon;
 - (10) not allow a person to be carried in the balloon who appears to be under the influence of psychoactive substances to the extent that the safety of the balloon or of any person or property carried therein is likely to be endangered;
 - (11) remain during flight in control of the balloon at all times except if another pilot is taking the controls;
 - (12) take any action in an emergency situation that requires immediate decision and action which he or she considers necessary under the circumstances. In such cases he or she may deviate from rules, operational procedures and methods to the extent necessary in the interest of safety;
 - (13) not continue a flight beyond the nearest weather-permissible operating site when his or her capacity to perform his or her duties is significantly reduced because of sickness, fatigue, lack of oxygen or any other cause;
 - (14) record utilisation data and all known or suspected defects in the balloon at the termination of the flight, or series of flights, in the balloon logbook;
 - (15) notify the authority of which the occurrence took place and the emergency services of without delay by the quickest available means of any serious incident or accident involving the balloon;
 - (16) submit a report of an act of unlawful interference without delay to the competent authority and inform the local authority designated by the State in the territory of which the unlawful interference took place; and
 - (17) Report to the appropriate air traffic services (ATS) unit, without delay, any hazardous weather or flight conditions encountered that are likely to affect the safety of other aircraft.
- (b) The pilot-in-command shall not perform duties on a balloon in one of the following situations:
- (1) when he or she is incapacitated from performing his or her duties by any cause, including injury, sickness, medication, fatigue or the effects of any psychoactive substance, or feels otherwise unfit;
 - (2) if applicable medical requirements are not fulfilled.
- (c) Whenever crew-members are involved in the operation of the balloon, the pilot-in-command shall:

- (1) ensure that during critical phases of flight or whenever deemed necessary in the interest of safety, all crew-members are at their assigned stations and do not perform any activities other than those required for the safe operation of the balloon;
 - (2) not commence a flight if any crew-member is incapacitated from performing his or her duties by any cause, including injury, sickness, medication, fatigue or the effects of any psychoactive substance, or feels otherwise unfit;
 - (3) not continue a flight beyond the nearest weather-permissible operating site when any crew-member's capacity to perform duties is significantly reduced because of sickness, fatigue or lack of oxygen or any other cause; and
 - (4) ensure that all crew-members can communicate with each other in a common language.
- (d) The pilot-in-command shall comply with both of the following:
- (1) the relevant requirements of the operator's occurrence reporting scheme referred to in CAR-77.360;
 - (2) all flight and duty time limitations and rest requirements applicable to his or her activities in accordance with the PACA requirements.

CAR 77.035 Authority of the Pilot-in-Command

The pilot-in-command shall have the authority to:

- (a) Give all commands and take any appropriate actions for the purpose of ensuring the safety of the balloon and of any person or property carried therein; and
- (b) Refuse embarkation or carriage of any person or baggage that may represent a potential hazard to the safety of the balloon or of any person or property carried therein.
- (c) Notwithstanding point (a) and (b), the operator shall take all reasonable measures to ensure that all persons carried in the balloon obey all lawful commands given by the pilot-in-command for the purpose of ensuring the safety of the balloon, of any person or property carried therein or of any person or property on the ground.

CAR 77.040 Responsibilities of Crew-members

- (a) Any crew-member shall be responsible for the proper execution of his or her duties in respect of the operation of the balloon.
- (b) Crew-members shall not perform duties on a balloon when incapacitated by any cause, including injury, sickness, medication, fatigue or the effects of any psychoactive substance, or if he or she feels otherwise unfit.
- (c) Crew-members shall report to the pilot-in-command both of the following:
 - (1) any fault, failure, malfunction or defect, which he or she believes may affect the airworthiness or safe operation of the balloon, including emergency systems;
 - (2) any incident.
- (d) Any flight crew-member who undertakes duties for more than one operator shall:
 - (1) maintain his or her individual records regarding flight times and rest periods, if applicable; and
 - (2) provide each operator with the data needed to schedule activities in accordance with the applicable flight and duty time limitations and rest requirements.

CAR 77.045 Compliance with Laws, Regulations and Procedures

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

- (b) The pilot-in-command shall be familiar with the laws, regulations and procedures, pertinent to the performance of his or her duties, prescribed for the areas to be traversed, the operating sites to be used and the related air navigation facilities.

CAR 77.050 Right of Way

- (a) CAR-180.053 paragraphs (3) (i) to (iii) states that balloon operations have right of way over aircraft, airships and gliders.
- (b) All balloon operations will be conducted VFR conditions and in compliance with the VFR requirements of flight stated in CAR-180.101.

CAR 77.055 Documents, Manuals and Information to be Carried

- (a) All of the following documents, manuals and information shall be carried on each flight, as originals or copies:
 - (1) the operating limitations, normal, abnormal and emergency procedures and other relevant information specific to the balloon's operating characteristics;
 - (2) details of the filed ATS flight plan, when required in accordance Regulation.
 - (3) current and suitable aeronautical charts for the area of the intended flight.
- (b) All of the following documents, manuals and information shall be carried on each flight or shall be stowed in the retrieve vehicle, as originals or copies:
 - (1) the certificate of registration;
 - (2) the certificate of airworthiness, including the annexes;
 - (3) the AFM or equivalent document(s);
 - (4) the aircraft radio license, where the balloon is equipped with radio communication equipment in accordance with point (a) of CAR-77.265;
 - (5) the insurance certificate(s);
 - (6) the balloon logbook or equivalent document(s);
 - (7) any other documentation that may be pertinent to the flight or is required by the State or States concerned with the flight.
- (c) When requested by the competent authority, the pilot-in-command or the operator shall make available to that authority the original documentation within the time period specified by the authority which shall not be less than twenty four (24) hours.

CAR 77.060 Dangerous Goods

- (a) No dangerous goods shall be transported on board the balloon
- (b) The operator shall:
 - (1) establish procedures to ensure that all reasonable measures are taken to prevent dangerous goods from being carried on board the balloon inadvertently; and
 - (2) provide crew-members with the necessary information enabling them to adequately carry out their duties in respect of any dangerous goods carried or intended to be carried on board the balloon.

CAR 77.065 Reserved

Restricted, Military Operating, and Danger Areas**CAR 77. 070 Restricted and Danger Areas**

- (a) A person must not operate a balloon within a restricted area designated in the AIP of the Sultanate of Oman unless that pilot:
 - (1) has the approval of the administering Authority responsible for the restricted area to operate within that area; and
 - (2) complies with any conditions promulgated for operation within the restricted area; and
 - (3) complies with any conditions imposed by the administering Authority for operation within the restricted area.
- (b) A person must not operate a balloon within a danger area designated in the AIP of the Sultanate of Oman unless he/she has determined that the activity associated with the danger area will not affect the safety of the balloon.

CAR 77. 075 Low Flying Zones

A person must not operate a balloon within a low flying zone designated in the AIP of the Sultanate of Oman:

CAR 77. 080 Military Operating Areas

A person must not operate a balloon within a military operating area designated in the AIP of the Sultanate of Oman unless the person has an approval to do so from the administering authorities responsible for the military operating area.

CAR 77. 085 Controlled Airspace

A person shall not operate a balloon in controlled airspace without prior authorisation from the ATC unit responsible for that airspace.

CAR 77. 090 Hazardous Operations

A person shall not operate a balloon in a manner that creates a hazard to aircraft or to persons or property.

CAR 77. 095 Balloon Logbook

For each flight, or series of flights, particulars of the balloon, its crew and each journey shall be retained in the form of a balloon logbook or an equivalent document.

Section 2 – Operating procedures

CAR 77.100 Use of Operating Sites

The pilot-in-command shall only use operating sites that are adequate for the type of balloon and operation concerned.

The pilot-in-command must ensure that the operation remains clear of airspace and must not operate in a danger area designated in the AIP of the Sultanate of Oman.

CAR 77.105 Noise Abatement Procedures

The pilot-in-command shall take into account operating procedures to minimise the effect of heating-system noise, while ensuring however that safety has priority over noise abatement.

CAR 77.110 Fuel and Ballast Supply and Planning

The pilot-in-command shall only commence a flight if the reserve fuel or ballast carried on board the balloon is sufficient to ensure a safe landing.

CAR 77.115 Passenger Briefing

The pilot-in-command shall ensure that before and, when appropriate, during the flight passengers are given a briefing on normal, abnormal and emergency procedures.

CAR 77.120 Carriage of Special Categories of Passengers

The pilot-in-command shall ensure that persons requiring special conditions, assistance or devices when carried on board a balloon are carried under conditions that ensure the safety of the balloon and of any persons or property carried therein.

CAR 77.125 Submission of the Air Traffic Service Flight Plan

The pilot-in-command shall submit adequate information, ATS flight plan in order to permit alerting services to be activated.

CAR 77.130 Flight Preparation

Before commencing the flight, the pilot-in-command shall be familiar with the available meteorological and aeronautical information appropriate to the intended flight which includes both of the following:

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

CAR 77. 135 Smoking on Board

No person shall smoke on board a balloon during any phase of flight or within the direct vicinity of a balloon.

CAR 77. 140 Carriage of Weapons

- (a) The pilot-in-command shall ensure that no person carries and uses a weapon on board the balloon.

CAR 77. 145 Meteorological Conditions

The pilot-in-command shall only commence or continue a VFR flight if the latest available meteorological information indicates that the weather conditions along the route and at the intended destination at the estimated time of use are as follows:

- (a) At or above the applicable VFR operating minima (see CAR-180.101 – Visual Flight Rules);
- (b) In the event weather conditions deteriorate below VMC, then operations will be conducted in accordance with CAR-180.077 paragraph (d); and
- (c) Within the meteorological limitations specified in the AFM.

CAR 77. 150 Take-off Conditions

The pilot-in-command shall be satisfied before commencing take-off of the balloon that, according to the latest available information, the weather at the operating site permits a safe take-off and departure.

CAR 77. 155 Approach and Landing Conditions

Except in emergency situations, the pilot-in-command shall be satisfied before commencing an approach to land that, according to the latest available information, the conditions at the intended operating site permit a safe approach and landing.

CAR 77. 160 Simulated Situations in Flight

- (a) The pilot-in-command shall not simulate situations that require the application of abnormal or emergency procedures when carrying passengers.
- (b) By way of derogation from paragraph (a), the pilot-in-command may simulate such situations, during operations other than commercial operations of the balloon, when conducting training flights with student pilots, provided that has been duly informed and agreed to the simulation in advance.

CAR 77. 165 In-flight Fuel Management

The pilot-in-command shall check at regular intervals during the flight that the amount of usable fuel or ballast remaining in flight is not less than the fuel or ballast needed to complete the intended flight and the reserve planned for landing.

CAR 77. 170 Refueling with Persons on Board

- (a) Refueling of balloons shall not be conducted when persons are on board.
- (b) By derogation from paragraph (a), refueling the engine of hot-air airships may be conducted with the pilot-in-command on board.

CAR 77. 175 Use of Restraint System

When a restraint system is required in accordance with sub-regulation CAR-77.230, the pilot-in-command shall wear the system at least during landing.

CAR 77. 180 Use of Supplemental Oxygen

The pilot-in-command shall ensure that:

- (a) All crew-members engaged in performing duties essential to the safe operation of the balloon use supplemental oxygen continuously whenever he or she determines that, at the altitude of the intended flight, the lack of oxygen might result in impairment of the faculties of crew-members; and
- (b) Supplemental oxygen is available to passengers when lack of oxygen might harmfully affect them.

CAR 77. 185 Operational Limitations at Night

- (a) Hot-air balloons shall not take off or land during night, except in emergencies;
- (b) Gas balloons and mixed balloons shall not take off or land during night, except in emergency situations or as a precautionary landing;

CAR 77. 190 Balloon Specialised Operations — Risk Assessment and Checklist

- (a) Before commencing a balloon specialised operation, the pilot-in-command shall conduct a risk assessment, assessing the complexity of the activity in order to determine the hazards and associated risks of the intended operation and establish mitigating measures where necessary.
- (b) A balloon specialised operation shall be performed in accordance with a checklist. The pilot-in-command shall establish that checklist and ensure that it is appropriate to the specialised activity and balloon used, based on the risk assessment and taking account of all requirements set out in this Subpart. The checklist shall be readily accessible on each flight to the pilot-in-command and other crew-members, where it is relevant for the performance of their duties.
- (c) The pilot-in-command shall regularly review and update the checklist where necessary in order to adequately take account of the risk assessment limitations set out in the AFM or equivalent document(s).

CAR 77. 195 Reserved**CAR 77.200 Weighing**

- (a) The weighing of the balloon shall be accomplished by the manufacturer of the balloon or an organization accepted /approved by the Authority.

- (b) The operator shall ensure that the mass of the balloon has been established by actual weighing prior to its initial entry into service.
- (c) The accumulated effects of modifications and repairs on the mass shall be accounted for and properly documented. Such information shall be made available to the pilot-in-command.
- (d) The balloon shall be reweighed if the effects of modifications or repairs on the mass are not known.

CAR 77. 205 Performance

The pilot-in-command shall only operate the balloon if the performance of the balloon is adequate to comply with the requirements set out in the Implementing Regulation and any other restrictions applicable to the flight, the airspace or operating sites used, ensuring that any charts or maps used are the latest available edition.

Section 3 – Instruments and Equipment

CAR 77. 210 General — Instruments and equipment

- (a) Instruments and equipment required by this Section shall be approved in accordance with certification standards approved by the authority of design organisation
 - (1) they are used to comply with sub-regulations CAR-77.265 and CAR-77.270;
 - (2) they are permanently installed in the balloon.
- (b) By way of derogation from point (a), all of the following instruments or equipment, when required by this Section, shall not need an approval:
 - (1) instruments or equipment used by the flight crew to determine the flight path;
 - (2) independent portable lights;
 - (3) an accurate time piece;
 - (4) first-aid kit;
 - (5) survival and signaling equipment;
 - (6) supplemental oxygen storage and dispensing apparatus;
 - (7) alternative source of ignition;
 - (8) fire blanket or fire-resistant cover;
 - (9) hand-held fire extinguisher;
 - (10) drop line;
 - (11) knife.
- (c) Instruments and equipment not required by this Section, as well as any other equipment that is not required by this CAR but is carried on board a balloon during a flight, shall comply with both of the following conditions:
 - (1) the information provided by those instruments or equipment shall not be used by the flight crew to comply with the essential requirements for airworthiness set out in the PACA applicable Regulation;
 - (2) the instruments and equipment shall not affect the airworthiness of the balloon, even in the case of failures or malfunction.
- (d) Instruments and equipment shall be readily operable or accessible from the station where the flight crew-member that needs to use it is assigned.
- (e) All required emergency equipment shall be easily accessible for immediate use.

CAR 77.215 Minimum Instruments and Equipment for Flight

A balloon flight shall not be commenced when any of the instruments and equipment required for the intended flight with the balloon are missing, inoperative or do not fulfil the required functions.

CAR 77.220 Operating Lights - Night Flying

Balloon operations at night require specific approval or authorisation by PACA.

Balloons operated at night shall be equipped with all of the following:

- (a) an anti-collision light;
- (b) a means to provide adequate illumination for all instruments and equipment essential to the safe operation of the balloon;
- (c) lighting that will provide suitable illumination of the ground from a height of 300 Ft AGL;
- (d) two (2) independent portable lights.

CAR 77.225 Flight and Navigational Instruments and Equipment

Balloons operated under VFR by day shall be equipped with the following:

- (a) a means of displaying drift direction;
- (b) SSR transponder for all flights within controlled airspace as per CAR-77.270; and
- (c) VHF communications for all flights within controlled airspace as per CAR-77.265.
- (d) a means of measuring and displaying:
 - (1) time in hours, minutes and seconds;
 - (2) vertical speed indicator (VSI), if required by the AFM;
 - (3) pressure altitude, if required by the AFM, when required by airspace requirements (Flight within controlled airspace) or when the altitude needs to be known for the use of oxygen;

CAR 77.230 Restraint Systems

Balloons shall be equipped with a restraint system for the pilot-in-command when the balloon is equipped with one of the following:

- (a) a separate compartment for the pilot-in-command;
- (b) turning (longitudinal and or directional control) vent(s).

CAR 77.235 Supplemental Oxygen

Balloons operated when an oxygen supply is required in accordance with CAR 77.180 shall be equipped with oxygen storage and dispensing apparatus capable of storing and dispensing the required oxygen supplies for the maximum permissible persons carried as per the AFM.

CAR 77.240 First-aid Kit

- (a) Balloons shall be equipped with a first-aid kit.
- (b) The first-aid kit shall be:
 - (1) readily accessible for use; and
 - (2) kept up-to-date.

CAR 77.245 Hand-held Fire Extinguishers

- (a) Except for gas balloons, balloons shall be equipped with at least one hand-held fire extinguisher.
- (b) Gas balloons with a fixed electrical system providing power to avionics equipment shall be equipped with a minimum of one applicable type hand-held fire extinguisher.

CAR 77.250 Life-saving and Signaling Equipment – Flights over Water

- (a) The pilot-in-command of a balloon operated over water shall determine, before commencing the flight, the risks to survival of the persons carried in the balloon in the event of ditching.
- (b) For all flights over water, life jackets will be provided to every person being carried prior to the commencement of flight.
- (c) The pilot-in-command will carry a waterproof ELT transmitting on 403.0MHz or an Underwater Locator Beacon (ULD) transmitting on 8.8kHz.

CAR 77.255 Life-saving and Signaling Equipment – Search and Rescue Difficulties

- (a) Balloons operated over areas in which search and rescue (SAR) would be especially difficult shall be equipped with such life-saving and signaling equipment as appropriate to the area overflown.
- (b) This equipment will include the following:
 - (1) An ELT transmitting on 403.0MHz;
 - (2) Emergency rations; and
 - (3) Emergency water.

CAR 77.260 Miscellaneous Equipment

- (a) Balloons shall be equipped with protective gloves for each crew-member.
- (b) Mixed balloons, hot-air balloons and hot-air airships shall be equipped with all of the following:
 - (1) an alternative and independent source of ignition;
 - (2) a means of measuring and indicating fuel quantity;
 - (3) a fire blanket or fire-resistant cover;
 - (4) a drop line of at least 25 m in length.
- (c) Gas balloons shall be equipped with both of the following:
 - (1) a knife;
 - (2) a trail rope of at least 20 m in length made of natural fiber or electrostatic, conductive material.

CAR 77.265 Radio Communication Equipment

- (a) Balloons shall have radio communication equipment to allow for the communication required in accordance with CAR OPS.
- (b) The radio communication equipment shall provide for communication on the aeronautical emergency frequency 121.5 MHz.

CAR 77.270 Transponder

Balloons shall have a secondary surveillance radar (SSR) transponder with all the capabilities required in accordance with airspace operating requirements designated by the authority as a transponder mandatory zone (TMZ) shall carry and operate SSR transponders capable of operating on Modes A and C or on Mode S, unless in compliance with alternative provisions prescribed for that particular airspace by the Air Navigation Service Provider.

SUBPART C — ADDITIONAL REQUIREMENTS FOR BALLOON COMMERCIAL OPERATIONS

Section 1 – General Organisation Requirements

CAR 77.275 Scope

In accordance with Article 3, this Subpart establishes the requirements to be met, in addition to the requirements of Subpart B, by any operator engaged in commercial operations with balloons.

CAR 77.280 Reserved

CAR 77.285 Safety Inspections and Audits

- (a) The Authority may in writing require the holder of a balloon operation organisation certificate to undergo or carry out such inspections and audits of the holder's facilities, documents, and records as the Authority considers necessary in the interests of civil aviation safety and security.
- (b) The Authority may require the holder of a balloon operation organisation certificate to provide such information as the Authority considers relevant to the inspection or audit.

Section 2 – Certification Requirements

CAR 77.290 Personnel Requirements

- (a) Each applicant for the grant of a balloon operation organisation certificate shall have available the services of, or in their employment, the following personnel:
 - (1) a senior person identified as the Accountable Manager who has the authority within the applicant's organisation to ensure all activities undertaken by the organisation can be financed and carried out in accordance with the requirements prescribed by this CAR
 - (2) a senior person or group of senior persons who are responsible for ensuring that the applicant's organisation complies with the requirements of Subpart C. Such nominated person or persons shall be ultimately responsible to the Accountable Manager.
 - (3) Sufficient adequately qualified and trained personnel to plan, perform, supervise, inspect and otherwise provide the activities for which certification is sought.
- (b) The applicant shall:
 - (1) establish a procedure to initially assess the competence of personnel performing the activities specified in the certificate; and
 - (2) establish a procedure to maintain the competence of those authorised personnel; and
 - (3) provide those authorised personnel with written evidence of the scope of their authorisation.
- (c) The applicant shall establish a procedure to ensure that those of its personnel performing activities for which a document is required under this Part or any other civil aviation regulation hold the appropriate document.

CAR 77.295 Resource Requirements

- (a) Each applicant for the grant of a balloon operation organisation certificate shall provide resources that enable the satisfactory provision of the activities for which certification is sought. Such resources shall, where appropriate, include:
 - (1) accommodation, offices, workshops, hangars, and buildings; and
 - (2) equipment, tools, material, training aids, data and documentation.
- (b) The applicant shall ensure that the environment it provides is appropriate for the tasks to be performed. In particular, the applicant shall ensure protection from weather elements and compliance with any special requirements specified within applicable airworthiness data and compliance with other special requirements considered applicable by the Authority.

CAR 77.300 Internal Quality Assurance

- (a) Each applicant for the grant of a balloon operation organisation certificate shall establish internal quality assurance procedures to ensure compliance with, and the adequacy of, the procedures required by Subpart C.
- (b) The senior person who has the responsibility for internal quality assurance shall have direct access to the Accountable Manager on matters affecting internal quality assurance.

CAR 77.305 Exposition Requirements

- (a) An applicant for the grant of a balloon operation organisation certificate shall provide the Authority with an exposition which shall contain:
 - (1) a statement signed by the Accountable Manager on behalf of the applicant's organisation confirming that the exposition and any included manuals:
 - i. define the organisation and demonstrate its means and methods for ensuring ongoing compliance with this CAR; and
 - ii. will be complied with at all times; and
 - (2) the titles and names of the senior person or persons required by CAR-77.290 paragraphs (a)(1) and (2); and
 - (3) the duties and responsibilities of the senior person or persons specified in paragraph (a)(2) including matters for which they have responsibility to deal directly with the Authority on behalf of the organisation; and
 - (4) an organisation chart showing lines of responsibility of the senior persons specified in paragraph (a)(2) and extending to each location listed under paragraph (a)(5); and
 - (5) details of those locations where members or employees of the organisation are to exercise functions or powers delegated by the Authority; and
 - (6) a summary of the resources at and the scope of activity to be conducted at each location listed under paragraph (a)(5); and
 - (7) details of the organisation's procedure for recording which of its members and employees hold authorisations granted by the organisation or delegations of the Authority's functions or powers, or both, including the extent and scope of those authorisations and delegations; and
 - (8) details of the procedures required by:
 - i. CAR-77.290 paragraph (b) regarding the competence of personnel; and
 - ii. CAR-77.290 paragraph (c) regarding the licensing of personnel; and
 - iii. CAR-77.300 regarding internal quality assurance of the organisation; and
 - iv. CAR-77.420 regarding reporting of defects or unsafe conditions; and
 - (9) procedures to control, amend and distribute the exposition.

- (b) The applicant's exposition must be acceptable to the Authority.

CAR 77.310 Privileges of Certificate

- (a) The balloon operation organisation certificate specifies the activities that the certificate holder is authorised to carry out.
- (b) A balloon operation organisation may be certificated to carry out all or any of the following activities:
- (1) establishing and certifying competency of persons flying balloon by:
 - i. prescribing examination syllabi:
 - ii. conducting examinations:
 - iii. prescribing flight test standards and criteria:
 - iv. conducting flight tests:
 - (2) establishing and certifying suitability of balloons and equipment by:
 - i. prescribing maintenance and inspection procedures and requirements:
 - ii. approving modifications:
 - iii. accepting design changes:
 - iv. investigating defects:
 - v. issuing safety advice in an appropriate form:
 - (3) appointing employees or members to positions of responsibility to oversee the safety aspects of the conduct of their members' operations.

CAR 77.315 Duration of Certificate

- (a) A balloon operation organisation certificate may be granted or renewed for a period of one year.
- (b) A balloon operation organisation certificate remains in force until it expires or is suspended or revoked by the Authority.
- (c) The holder of a balloon operation organisation certificate that expires or is revoked shall forthwith surrender the certificate to the Authority.
- (d) The holder of a balloon operation organisation certificate that is suspended shall forthwith produce the certificate to the Authority for appropriate endorsement

CAR 77.320 Continued Compliance

Each holder of a balloon operation organisation certificate shall:

- (1) hold at least one complete and current copy of their exposition at each location specified in their exposition; and
- (2) comply with all procedures detailed in their exposition; and
- (3) make each applicable part of their exposition available to personnel who require those parts to carry out their duties; and
- (4) continue to meet the standards and comply with the requirements of Subpart C prescribed for balloon operation organisation certification under this CAR; and
- (5) notify the Authority of any change of address for service, telephone number, or facsimile number within 28 days of the change.

CAR 77.325 Records – Personnel

- (a) Each holder of a balloon operation organisation certificate shall maintain a record of each member or employee exercising any:
 - (1) delegations of the Authority's functions or powers; or
 - (2) authorisations granted by the organisation.
- (b) The record shall include details of the members or employee's experience, qualifications, training and current delegations and authorisations.
- (c) The record shall be retained for one (1) year from the date that the member or employee ceases to exercise all of his or her delegations and authorisations.

CAR 77.330 Records – Facilities, Equipment, Tools and Material

Each holder of a balloon operation organisation certificate shall record details of testing, checking and calibration of any safety-critical facilities, equipment, tools and material used in carrying out any of the activities specified in the certificate

CAR 77. 335 Changes to Certificate Holder's Organisation

- (a) Each holder of a balloon operation organisation certificate shall ensure that their organisation exposition is amended so as to remain a current description of the holder's organisation.
- (b) The certificate holder shall ensure that any amendments made to the holder's exposition meet the applicable requirements of this CAR and comply with the amendment procedures contained in the holder's exposition.
- (c) The certificate holder shall provide the Authority with a copy of each amendment to the holder's exposition as soon as practicable after its incorporation into the exposition.
- (d) Where a certificate holder proposes to make a change to any of the following, prior notification to and acceptance by the Authority is required:
 - (1) the Accountable Manager;
 - (2) the listed senior persons;
 - (3) the location or locations at which the members or employees of the organisation exercise functions and powers delegated by the Authority;
 - (4) the scope of activities covered by the certificate.
- (e) The Authority may prescribe conditions under which a certificate holder may operate during or following any of the changes specified in paragraph (d).
- (f) A certificate holder shall comply with any conditions prescribed under paragraph (e).
- (g) Where any of the changes referred to in this rule requires an amendment to the certificate, the certificate holder shall forward the certificate to the Authority as soon as practicable.
- (h) The certificate holder shall make such amendments to the holder's exposition as the Authority may consider necessary in the interests of aviation safety.

CAR 77. 340 Responsibilities of the Operator

- (a) The operator shall be responsible for the operation of the balloon in accordance with the essential requirements set out with the requirements of this Subpart and with its declaration.
- (b) Every flight shall be conducted in accordance with the provisions of the operations manual.
- (c) The operator shall ensure that the balloon is equipped and all crew-members are qualified as required for the area and type of operation.
- (d) The operator shall ensure that all crew-members assigned to, or directly involved in, flight operations comply with all of the following conditions:

- (1) they are properly trained and instructed;
 - (2) they are aware of the rules and procedures relevant to their particular duties;
 - (3) they have demonstrated their abilities in their particular duties;
 - (4) they are aware of their responsibilities and the relationship of such duties to the operation of the balloon as a whole.
- (e) The operator shall establish procedures and instructions for the safe operation of each balloon type, containing duties and responsibilities of the crew-members, for all types of operations. Those procedures and instructions shall not require crew-members to perform any activity during critical phases of flight other than those required for the safe operation of the balloon.
- (f) The operator shall make arrangements for the supervision of crew-members and personnel involved in the operation of the balloon by individuals with adequate experience and skills in order to ensure the attainment of the standards specified in the operations manual.
- (g) The operator shall ensure that all crew-members and personnel involved in the operation of the balloon are made aware that they are to comply with the laws, regulations and procedures of the States in which operations are conducted that are pertinent to the performance of their duties.
- (h) The operator shall specify flight-planning procedures to provide for the safe conduct of the flight, based on considerations of balloon performance, other operating limitations and relevant expected conditions on the route to be followed and at the operating sites concerned. Those procedures shall be included in the operations manual.

CAR 77.345 Notification of Alternative Means of Compliance

The operator shall, when making the declaration in accordance with point CAR-77.350, notify to the authority the list of alternative means of compliance (AltMoC), where it intends to use AltMoC to demonstrate compliance when so requested in accordance with sub-regulation CAR-77.010. That list shall contain references to the acceptable means of compliance (AMC) which they replace in the associated AMC that has been adopted by the Authority.

CAR 77.350 Access

- (a) For the purpose of determining compliance with the essential requirements set out with the requirements of this Regulation, the operator shall grant access to any person authorised by the Authority at any time to any facility, balloon, document, records, data, procedures or any other material relevant to the operator's activity falling within the scope of this Regulation, irrespective of whether the activity is contracted or not.
- (b) Access to the balloon shall, in the case of commercial passenger ballooning, include the possibility to enter and remain in the balloon during flight operations, unless to do so would endanger the flight.

CAR 77.355 Findings

After receipt of the notification of findings raised by the authority the operator shall do all of the following:

- (a) identify the root cause of the non-compliance;
- (b) define a corrective action plan;
- (c) demonstrate implementation of the corrective action plan to the satisfaction of the competent authority within the time period specified by that authority.

CAR 77.360 Occurrence Reporting

- (a) The operator shall implement, as part of its management system, an occurrence reporting scheme which is to provide for mandatory and voluntary reporting
- (b) Without prejudice to paragraph (a), the operator shall report to the authority and to the organisation responsible for the design of the balloon any malfunction, technical defect, exceeding of technical limitations or occurrence that would highlight inaccurate, incomplete or ambiguous information contained in data established and any other occurrence which constitutes an incident but not an accident or serious incident.
- (c) The operator shall take the necessary measures to ensure compliance by the pilot-in-command, any other crew-member and all its personnel in respect of any serious incident or accident associated with the operation of a balloon.

CAR 77.365 Management System

- (a) The operator, in accordance with CAR-100 (Safety Management Systems), shall establish, implement and maintain a management system that includes all of the following:
 - (1) clearly defined lines of responsibility and accountability throughout the organisation of the operator, including a direct safety accountability of the accountable manager;
 - (2) a description of the overall philosophies and principles of the operator with regard to safety, which shall be known as the safety policy;
 - (3) the identification of aviation safety hazards entailed by the activities of the operator, the evaluation of those hazards and the management of associated risks, including by taking actions to mitigate those risks where necessary and verifying the effectiveness of those actions;
 - (4) maintaining personnel trained and competent to perform their tasks;
 - (5) documentation of all key processes of the management system, including a process for making personnel aware of their responsibilities and the procedure for amending that documentation;
 - (6) a function to monitor compliance of the operator with the requirements of this regulation. Such compliance monitoring shall include a feedback system of findings to the accountable manager of the operator to ensure effective implementation of corrective actions as necessary;
 - (7) the processes necessary to ensure compliance with the PACA requirements
- (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 of those activities.

CAR 77.370 Contracted Activities

When contracting any part of its activity falling within the scope of this Regulation, the operator shall be responsible for ensuring that the contracted organisation carries out the activity in accordance with the essential requirements set out in PACA air operation Regulation and with the requirements of this Regulation. The operator shall also ensure that the authority is given access to the contracted organisation in order to determine that the operator is compliant with those requirements.

CAR 77.375 Personnel Requirements

- (a) The operator shall appoint an accountable manager who has the authority to ensure that all activities falling within the scope of this Regulation can be financed and carried out in accordance with the essential requirements set out in PACA air operation regulation and with the

requirements of this Regulation. The accountable manager shall be responsible for establishing and maintaining an effective management system.

- (b) The operator shall:
 - (1) identify the responsibilities of its personnel for all tasks and activities to be performed;
 - (2) have sufficient qualified personnel to carry out those tasks and activities; and
 - (3) maintain appropriate experience, qualification and training records of its personnel.
- (c) The operator shall nominate one or more persons responsible for the management and supervision of all of the following areas:
 - (1) flight operations;
 - (2) ground operations;
 - (3) continuing airworthiness, in accordance with CAR M.

CAR 77.380 Airworthiness Requirements

Balloons shall have a certificate of airworthiness issued in accordance with established PACA Regulation or, in the case of a balloon registered in a third country, shall be subject to either a wet lease agreement or a dry lease agreement in accordance with point CAR-77.455.

CAR 77.385 Airworthiness Standards for Balloons

- (a) Authority accept the airworthiness standards applicable to balloons of the United States of America (USA) Federal Aviation Regulations (FAR) Part 31 and European Aviation Safety Agency (EASA) CS-31HB airworthiness standards and changes to those standards.
- (b) Given that automatic recognition, the approvals given under those regulatory systems may be taken to be an approval granted by the PACA.
- (c) PACA may also give, suspend or cancel such approvals.

Note: *The provisions in Part 31 for acceptance of approvals granted by the Federal Aviation Administration (of the USA) under FAR Part 31, or EASA under CS-31HB or CS-31GB, only apply in relation to approvals specifically granted under those regulations.*

CAR 77. 390 Continuing Airworthiness Requirements

- (a) The balloon must not be operated unless:
 - (1) the balloon is in an airworthy condition;
 - (2) the operational and emergency equipment necessary for the intended flight is serviceable;
 - (3) the airworthiness document of the balloon is valid; and
 - (4) the maintenance of the balloon is performed in accordance with its maintenance programme.
- (b) Before each flight or consistent series of consecutive flights, the balloon must be inspected, through a pre-flight check, to determine whether it is fit for the intended flight.
- (c) The maintenance programme must contain in particular, maintenance tasks and intervals, especially those that have been specified as mandatory in the instructions for continuing airworthiness.
- (d) The balloon 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.
- (e) All records demonstrating the airworthiness of the balloon must be kept until the information contained has been superseded by new information equivalent in scope and detail but not less

than twenty four (24) months in the case of detailed maintenance records. When the aircraft is leased, all records demonstrating the airworthiness of the balloon must be kept at least for the length of the lease.

- (f) All modifications and repairs must comply with the essential requirements for airworthiness. The substantiating data supporting compliance with the airworthiness requirements must be retained.

CAR 77.395 Reserved

Maintenance Requirements

CAR 77.400 Maintenance Schedule

- (a) Balloons are classified as Class B aircraft, which are required to have a maintenance schedule.
- (b) A balloon certificate of registration holder may maintain a balloon according to the manufacturer's maintenance schedule or an approved system of maintenance.
- (c) This regulation requires the selected schedule to be entered on the balloon's logbook statement, a copy of which is required to be forwarded to the PACA office that has administrative control over that balloon's records.

CAR 77.405 Maintenance Personnel

- (a) This regulation specifies that all maintenance that is performed on balloons must be performed by appropriate persons. Major repairs, may only be performed under the control of an appropriate certificate of approval holder.
- (b) Certain repairs where the manufacturer has not been consulted may be prohibited. Examples include the following:
 - (1) replacement of original fabric panels exceeding 50% of the total panel count;
 - (2) welding repairs;
 - (3) swaging;
 - (4) repair of flying wires or basket wire assemblies.
- (c) The appropriate persons to perform and certify for maintenance are listed below:
 - (1) the pilot-in-command (other than a student pilot) limited to:
 - i. post-assembly daily or pre-take-off inspections
 - ii. maintenance specified in Appendix A of this CAR,
 - iii. for balloons operated under an Air Operator's Certificate (AOC), the pilot should be assessed as competent to perform the activities in Appendix A of this CAR, and approved by the AOC holder prior to the task being performed
 - iv. A person mentioned in CAR-77.410.

CAR 77.410 Repairs and Maintenance

The only persons permitted to conduct maintenance (other than pilots mentioned CAR-77.405) are:

- (a) the holder of a maintenance authority (MA) under PACA regulation
- (b) the holder of an authorisation issued by PACA, in writing, authorised for the purposes of this CAR to the extent indicated on the authority
- (c) the holder of a maintenance authority issued under the AOC holder in accordance with the PACA approved procedure.

CAR 77.415 Compliance of Airworthiness Directive (AD)

- (a) As an Airworthiness Directive (AD) is a direction under CAR-39, any additional special inspection, test, check or modification requirements that are contained in an AD must be observed.
- (b) As the log book, or technical log if used, also performs the function of the maintenance release, any maintenance that will be required to be performed on the balloon between each periodic inspection is required to be entered in the log book or technical log and certified by a person who is authorised to make the certification.

CAR 77.420 Maintenance Certification Requirements

- (a) This regulation directs that all maintenance is to be certified. When maintenance has been completed, an entry and certification is required in the balloon's log book to record maintenance and should include:
 - (1) periodic inspections as per CAR-77.400;
 - (2) hard landing inspection whenever a landing has been made while the balloon was experiencing a high rate of descent if damage is suspected;
 - (3) defect rectifications;
 - (4) repairs;
 - (5) modifications;
 - (6) component replacements;
 - (7) post power line or lightning electricity strike;
 - (8) an envelope inspection post overheating as indicated by an envelope temperature monitoring device.

CAR 77.425 Reporting of Defects or Un-airworthy Conditions

- (a) Each holder of a balloon operation organisation certificate shall establish a procedure for reporting any defect or condition of a balloon operated by a member of the holder's organisation that could jeopardise the safe operation of the balloon.
- (b) Any such defects or conditions shall be reported to the Authority

CAR 77.430 Maintenance Records

- (a) A balloon, for the purpose of record keeping, means the envelope and suspension system, which is the specified aircraft, plus its associated components.
- (b) A balloon requires a logbook to record its airworthiness and maintenance history, and maintenance certifications.
- (c) The basket and burner are major components of a balloon and may have separate maintenance certification logs. Where regular interchange of components occurs, it is recommended that the operator maintains separate maintenance certification logs for the major components as appropriate. Where no interchange of components is made, one maintenance certification log is sufficient.
- (d) A logbook needs to be retained by the certificate of registration holder, for at least twelve (12) months after the balloon has been withdrawn from service. Alternative compliant logbooks may be used.

CAR 77.435 Placards

Each operator of a balloon shall ensure that a legible placard is installed in clear view of the pilot stating:

- (a) The certificated or design gross weight, whichever is the lesser; and
- (b) The maximum and minimum payload for the aeroplane.

CAR 77.440 Facility Requirements

The operator shall have facilities that are sufficient to allow for the performance and management of all tasks and activities required to ensure compliance with the essential requirements set out in this CAR.

Section 3 – Declaration, Airworthiness and Wet and Dry Lease**CAR 77.445 Declaration**

- (a) In the declaration referred to in Article 3 – Air Operations, paragraph (2) of this CAR, the operator shall confirm that the operator complies and will continue to comply with the essential requirements set out in this CAR.
- (b) The operator shall include in the declaration all of the following information:
 - (1) the name of the operator;
 - (2) the place where the operator has its principal place of business;
 - (3) the name and contact details of the accountable manager of the operator;
 - (4) the starting date of the commercial operation and, where relevant, the date at which the change to an existing commercial operation takes effect;
 - (5) in respect of all balloons used for the commercial operation, the balloon type, registration, main base, type of operation and continuing airworthiness management organisation.
- (c) Where applicable, the operator shall annex to the declaration the list of Alternative Means of Compliance (AltMoC), in accordance with point CAR-77.345.
- (d) When making the declaration, the operator shall use the form contained in the Appendix to this regulation.

CAR 77.450 Changes to the Declaration and Cessation of Commercial Operations

- (a) The operator shall notify the competent authority without delay of any changes in circumstances affecting its compliance with the essential requirements set out in PACA regulations and with the requirements of this Regulation, as declared to the authority, and of any changes in respect of the information referred to in point CAR-77.445 (b) and the list of AltMoC referred to in CAR-77.445 paragraph (c), as included in or annexed to the declaration.
- (b) The operator shall notify the competent authority without delay when it is no longer engaged in commercial operations with balloons.

CAR 77.455 Wet Lease and Dry Lease of a Balloon Registered in a Third Country

- (a) The operator shall notify to the authority any wet lease agreement or dry lease agreement concerning a balloon registered in a third country
- (b) Where a balloon registered in a third country is subject to a wet lease agreement, the operator shall ensure that the level of safety resulting from the application of the safety standards with regard to continuing airworthiness and air operations to which the third country operator of the balloon is subject, is at least equivalent to that resulting from the application of the requirements of PACA Regulation.
- (c) Where a balloon registered in a third country is subject to a dry lease agreement, the operator shall ensure compliance with the essential requirements relating to continuing airworthiness requirements of CAR M and with the requirements of this Regulation.

Section 4 – Manuals and Records**CAR 77.460 Operations Manual**

- (a) The operator shall establish an Operations Manual (OM).
- (b) The content of the operations manual shall reflect the requirements set out in this regulation and shall not contravene any information contained in the operator's declaration.
- (c) The operations manual may be established as separate parts.
- (d) All personnel of the operator shall have easy access to the portions of the operations manual that are relevant to their duties.
- (e) The operations manual shall be kept up-to-date. All personnel of the operator shall be made aware of any amendment of the operations manual that are relevant to the performance of their duties.
- (f) The operator shall ensure that any information used as the basis for the content of the operations manual and any amendment thereof is correctly reflected in the operations manual.
- (g) The operator shall ensure that all personnel are able to understand the language in which those parts of the operations manual which are relevant to their duties are written. The content of the operations manual shall be presented in a form that can be used without difficulty.

CAR 77.465 Record Keeping

- (a) The operator shall establish a system of record keeping that allows adequate storage and reliable traceability of its activities.
- (b) The format of the records shall be specified in the operator's procedures or manuals.

CAR 77.470 Composition of Flight Crew

- (a) The composition of the flight crew shall be, as a minimum, as specified in the AFM or operating limitations prescribed for the balloon.
- (b) The flight crew shall include additional flight crew-members when required by the type of operation. The number of the flight crew shall not be lower than the number specified in the operations manual.
- (c) All flight crew-members shall hold a license and ratings issued or accepted in accordance with CAR FCL and appropriate to the duties assigned to them.
- (d) Flight crew-members may be relieved during the flight of their 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 of the following requirements are complied with:
 - (1) the requirements of this Subpart;
 - (2) CAR FCL, including the requirements on recent experience;
 - (3) the flight and duty time limitations and rest requirements in accordance with the national law of the Member State where the operator has its principal place of business, taking into account all services rendered by the flight crew-member to other operators.

CAR 77.475 Designation as Pilot-in-Command (PIC)

- (a) The operator shall designate one pilot amongst the flight crew as pilot-in-command.
- (b) The operator shall only designate a pilot to act as pilot-in-command if he or she:
 - (1) is qualified to act as pilot-in-command in accordance with CAR FCL.
 - (2) has the minimum level of experience specified in the operations manual; and
 - (3) has adequate knowledge of the area to be flown.

CAR 77.480 Provision of Training and Checking

All training and checking of flight crew-members required pursuant to CAR-77.485 shall be provided as follows:

- (a) in accordance with the training programmes and syllabi established by the operator in the operations manual;
- (b) by appropriately qualified persons and, as regards flight training and checking, by persons qualified in accordance with CAR FCL.

CAR 77.485 Recurrent Training and Checking

- (a) Each flight crew-member shall complete every two (2) years recurrent flight and ground training relevant to the class of balloon on which he or she operates, including training on the location and use of all emergency and safety equipment carried.
- (b) Each flight crew-member shall complete operator proficiency checks to demonstrate his or her competence in carrying out normal, abnormal and emergency procedures, covering the relevant aspects associated with the specialised tasks described in the operations manual. When carrying out those checks, due account shall be taken of crew-members who undertake operations under VFR at night.
- (c) The operator proficiency check shall be valid for twenty four (24) calendar months, counting from the end of the month during which the check was carried out or, in case the check is carried out within the last three (3) months of the validity period of the previous check, from the last day of the validity period of previous check.

Section 5 – General Operating Requirements

CAR 77.490 Additional Balloon Crew-member

When a balloon carries more than nineteen (19) passengers, at least one additional crew-member shall be present on board the balloon in addition to the flight crew as required pursuant to sub-regulation CAR-77.470 paragraphs (a) and (b), to assist passengers in the event of an emergency. That additional crew-member shall be appropriately experienced and trained.

CAR 77.495 Fitness Relating to Deep Water Diving and Blood Donation

Crew-members shall not perform any duties on the balloon where their fitness might be impaired after deep water diving or following blood donation.

CAR 77.500 Common Language

The operator shall ensure that all crew-members can communicate with each other in a common language.

CAR 77.505 Psychoactive Substances

The operator shall take all reasonable measures to ensure that no person enters or is in a balloon when under the influence of psychoactive substances to the extent that the safety of the balloon, of any person or property carried therein or of any person or property on the ground is likely to be endangered by the presence of that person.

CAR 77.510 Endangering Other Persons or Property

The operator shall take all reasonable measures to ensure that no person, intentionally, recklessly or negligently, acts or omits to act with one of the following consequences:

- (a) Endanger a balloon or person therein or on the ground;
- (b) Cause or permit a balloon to endanger any person or property.

CAR 77.515 Documents, Manuals and Information to be Carried

- (a) All of the following documents, manuals and information shall be carried on each flight as originals or copies:
 - (1) the declaration made by the operator;
 - (2) information concerning search and rescue services for the area of the intended flight;
 - (3) the operational flight plan.
- (b) All of the following documents, manuals and information shall be stowed at a safe place, not on board the balloon during a flight, as originals:
 - (1) the documents, manuals and information referred to in paragraph (a), when copies thereof are carried on board the balloon during a flight;
 - (2) the current parts of the operations manual or the standard operating procedures (SOPs) that are relevant to the duties of crew-members, which shall be easily accessible to them;
 - (3) passenger lists, when passengers are carried;

- (4) the mass documentation referred to in sub-regulation CAR-77.535 paragraph (c).
- (c) When requested by the competent authority, the pilot-in-command or the operator shall make available to that authority the original documents, manuals and information within the time period specified by the authority which shall not be less than twenty four (24) hours.

CAR 77.520 Fuel or Ballast Calculations

The operator shall ensure that the calculations as regards reserve fuel or ballast are documented in an operational flight plan.

CAR 77.525 Carriage of Special Categories of Passengers

The operator shall establish procedures for carrying persons requiring special conditions, assistance or devices when carried on board a balloon under conditions that ensure the safety of the balloon and of any person or property carried therein.

CAR 77.530 Commercial Balloon Specialised Operations — Standard Operating Procedures (SOPs)

Notwithstanding sub-regulation CAR-77.190:

- (a) Before commencing a commercial balloon specialised operation, the operator shall conduct a risk assessment, assessing the complexity of the intended operation in order to determine the hazards and associated risks of the operation and to establish mitigating measures where necessary.
- (b) Based on the risk assessment, the operator shall, before commencing the commercial balloon specialised operation, establish standard operating procedures (SOPs) appropriate to the intended operation and the balloon used. The SOPs shall either be part of the operations manual or be laid down in a separate document. The operator shall regularly review and update the SOPs where necessary in order to adequately take account of the risk assessment.
- (c) The operator shall ensure that commercial balloon specialised operations are performed in accordance with the SOPs.

Section 7 – Performance and Operating Limitations

CAR 77. 535 System for Determining the Mass

- (a) The operator shall establish a system specifying how all of the following items are accurately determined for each flight, so as to enable the pilot-in-command to verify that the limitations of the AFM are complied with:
 - (1) balloon empty mass;
 - (2) mass of the traffic load;
 - (3) mass of the fuel or ballast load;
 - (4) take-off mass;
 - (5) loading of the balloon performed under the supervision of the pilot-in-command or qualified personnel;
 - (6) preparation and disposition of all documentation.
- (b) The mass computation based on electronic calculations shall be replicable by the pilot-in-command.
- (c) The mass documentation, specifying the items listed in paragraph (a), shall be prepared prior to each flight and documented in an operational flight plan.

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Appendix A

Maintenance on Balloons

1. The following maintenance on the balloon's envelope:
 - (a) replacing envelope temperature flags (but not including replacing temperature tell-tale tags);
 - (b) removing or installing envelope temperature probes;
 - (c) adhesive patch repairs on envelope fabric in accordance with the manufacturer's directions for such repairs;
 - (d) minor sewn fabric repairs below the first horizontal load tape as permitted by the manufacturer's maintenance manual;
 - (e) adjusting, replacing or repairing control lines other than deflation lines;
 - (f) removing or installing karabiners;
 - (g) removing or installing crown line;
 - (h) removing or installing scoops and skirts.
2. The following maintenance on the balloon's basket:
 - (a) interchanging or replacing basket in accordance with balloon operating handbook or other acceptable data;
 - (b) minor repairs to basket trim materials;
 - (c) re-varnishing or re-oiling basket wicker;
 - (d) removing or installing fire extinguishers;
 - (e) removing or installing burner poles;
 - (f) removing or installing handling line and container;
 - (g) removing or installing storage pouches.
3. The following maintenance on the balloon's fuel cylinders:
 - (a) replacing or lubricating fuel cylinder tank inlet or outlet O-rings;
 - (b) removing or replacing fuel cylinder straps;
 - (c) replacing fuel cylinder contents gauge glasses held in by screws (but not including replacing the whole contents gauge assembly);
 - (d) repairing or installing cylinder jackets;
 - (e) removing or installing heater pads;
 - (f) interchanging or replacing fuel cylinder if the cylinder is designated as interchangeable in balloon operating handbook or other acceptable data;
 - (g) adjusting LPG vapour regulators if the adjustment does not involve disassembly of regulator.
4. The following maintenance on the balloon's burner systems:
 - (a) cleaning liquid pilot light regulators;
 - (b) cleaning or replacing seals in hose couplings;
 - (c) removing, cleaning or installing pilot light or burner jets, including filters;
 - (d) tightening burner parts, including heat shields;
 - (e) lubricating (not requiring disassembly other than removing lubrication port blanks);
 - (f) removing, replacing or adjusting piezo igniter system;
 - (g) adjusting liquid fire (whisper) or pilot light values;
 - (h) removing or installing burner in accordance with balloon operating handbook or other acceptable data.
5. The following maintenance on the balloon's burner frame:
 - (a) removing or installing burner frame heat shields;
 - (b) adjusting burner gimbal friction.
6. The following maintenance on the balloon's instruments and radio:
 - (a) replacing batteries;
 - (b) changing instrument packs;
 - (c) removing or installing radio if:

- i. no disturbance is required to the balloon's instruments or electrical wiring; and
 - ii. there is no need to disassemble a primary structure of the balloon.
- 7. The following maintenance on the balloon's other equipment:
 - (a) removing or replacing other equipment if:
 - i. no modifications are required to the balloon's instruments or electrical wiring; and
 - ii. there is no need to disassemble a primary structure of the balloon;
 - (b) removing, replacing or adjusting non-structural standard fasteners incidental to operations.