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GOVERNMENT OF INDIA
OFFICE OF THE DIRECTOR GENERAL OF CIVIL AVIATION
TECHNICAL CENTRE, OPP. SAFDARJUNG AIRPORT, NEW DELHI – 110003

**CIVIL AVIATION REQUIREMENT
SECTION 2 – AIRWORTHINESS
SERIES F PART XV
ISSUE III, DATED ___ MARCH 2015**

EFFECTIVE: FORTHWITH

Subject: Requirements for manufacture, registration and airworthiness control of hot air balloons.

Introduction

This Civil Aviation Requirement lays down the requirements for manufacture, registration, issue/ renewal of Certificate of Airworthiness and continuous maintenance of manned free balloons

1. Definitions:

- (i) "Balloon" means a non-power-driven lighter than air aircraft.
- (ii) "Hot Air Balloon" means a balloon that derives its lift from heated air contained within the envelope.
- (iii) "Balloon Component" means any part, soundness and correct functioning of which when fitted to a Balloon is essential for the continued airworthiness and safety of the balloon.
- (iv) "Major Damage" means any damage to a balloon or balloon component which may affect the safety of the balloon or safety of the person on board.
- (v) "Major Defect" means any failure or malfunctioning of a balloon or balloon component, which may affect safety of balloon and/or of persons on board.
- (vi) "Envelope" means the enclosure in which the lifting medium is contained.
- (vii) "Basket" means the container suspended beneath the envelope, mainly used for the balloon occupants.
- (viii) "Design Maximum Weight" means the maximum all up weight of the balloon when not filled with lifting gas or air.

2. **Design & Manufacture of Hot Air Balloons**

- 2.1 The standards prescribed in FAR Part 31 for the design shall be the minimum requirements for airworthiness of the hot air balloons.
- 2.2 The suitability and durability of all materials must be established on the basis of experience or tests. It will be ensured that they have the strength and other properties assumed in the design.
- 2.3 Persons/firms desirous to take up design and manufacture of hot air balloons will intimate the DGCA of their intention and apply for necessary approval as required **under CAR 21**.
- 2.4 Before a person/firm undertakes manufacture of hot air balloon, a clearance from the local police authorities regarding his character/ antecedents shall be obtained.
- 2.5 A hot air balloon used for personal flying by the pilot(s) need not have a Type Certificate. All other balloons should have a Type Certificate issued or revalidated by the DGCA before undertaking the manufacture.
- 2.6 The manufacturer will be responsible for the quality assurance of his products and will issue a certificate of compliance to airworthiness standards, except where the balloon is certified in Experimental category.
- 2.7 The manufacturer shall keep a complete record of all hot air balloons manufactured and full particulars of those to whom sold and should produce this record to DGCA when required.
- 2.8 The manufacturer shall prepare the necessary documents regarding maintenance and operation for approval of the DGCA in accordance with CAR 21 for the Experimental Category balloons.
- 2.9 The manufacturer shall develop satisfactory maintenance programme to ensure continued airworthiness of the hot air balloon and should deliver the same with every balloon produced. The manufacturer should also specify the overhaul life of the burner/instruments/gas pipelines and advise the operators regarding organizations which should be approached for the overhaul or other major maintenance. He will be responsible for issuance of any modifications to the hot air balloon to improve safety of operations after the approval of DGCA. For this purpose the manufacturer may provide kits or drawings or suggest alternate methods so that the operators can carry out the modifications.

2.10 Components of Balloon/Spare Parts and Materials used on a Balloon :

Components of Balloon/Spare Parts and materials used thereon shall be :-

- (i) Covered by a Release Note, or equivalent document acceptable to Director General, issued by an approved firm.
- (ii) Manufactured or repaired/overhauled, inspected and certified as airworthy by an approved organization or person appropriately licensed or approved by Director General.

3. SECURITY ASPECTS - Following are the requirements of MHA/BCAS related to security concerns for operation of Hot Air balloon;
- 3.1 Any person or firm intending to acquire/manufacture or register a hot air balloons is required to obtain security clearance from Ministry of Home Affairs. For this purpose they have to submit duly filled Performa as given in Annexure I of this CAR along with a copy of security clearance certificate obtained from local police authorities to DGCA HQRS (Directorate of Airworthiness). The request of applicant for security clearance shall be forwarded to MHA after ensuring that the application is complete in all respect. After receipt of security clearance from MHA, applicant will be informed accordingly.
 - 3.2 Security program shall be approved by BCAS for security oversight before issue of permit to fly. Owner/Operator should submit the security program to BCAS for approval
 - 3.3 Security measures approved by BCAS shall be ensured at the place of operation before each flight. The owner/operator shall be responsible for the safe custody, security and access control of the hot air balloons
 - 3.4 Areas of operation/ flying activities shall be notified and it should be away from sensitive installations.
 - 3.5 The operator shall maintain proper log Book and submit the same to the office of District Magistrate on quarterly basis.
 - 3.6 For each flight, operator shall file the flight program to District Magistrate.
 - 3.7 Details of approved owners/operators should be made available to local district authority's i.e. District Magistrate and Superintendent of Police to ensure that no breach is done by them.
 - 3.8 A fresh security clearance from local Police shall be mandatory before every renewal of Airworthiness Review Certificate.
 - 3.9 If at any point of time, any breach is noticed by MHA/ State Govt. Authorities, same may be informed to BCAS/DGCA for taking appropriate action.
 - 3.10 Local Police to ensure that no security breach has been done by the operator.
 - 3.11 Copy of Certificate of Registration (usual station) may be forwarded to AAI for monitoring the flying activities in their area.
 - 3.12 No Hot Air Balloon shall carry any remote sensing appurtenances / weapon / photography/ video recording equipment without the express permission of MHA except those equipments required for the safe operation of the balloon.
 - 3.13 The hot air balloons shall be parked at the **designated** airports/ approved places only.
 - 3.14 The hot air balloons shall not be sold or disposed of in any way to any person or firm without production of a certificate from the DGCA. The certificate shall granted by the DGCA after verifying the antecedents of the prospective buyers from the local police authorities.

3.15 Severe penalties/ action will be taken against the defaulters.

4. Registration and Markings of Balloons:

- 4.1 All manned free balloons are required to be registered before any flight is undertaken and registration markings must be affixed thereon in manner prescribed in CAR Section 2 - Series 'X', Part I.
- 4.2 The application for registration should be made on the prescribed proforma CA-28 and should include the **prescribed fee as per rule 35 of Aircraft rules 1937, in the form of Bank Draft payable to the PAO, DGCA, MCA, New Delhi.**
- 4.3 The Certificate of registration, when issued, shall include information on the type of Hot Air balloon, constructor's serial number, nationality, registration markings assigned, the number and date of registration. A copy of this C of R shall be kept on board during flight.
- 4.4 Every hot air balloon shall carry an identification plate showing the registration markings, constructor's name, the balloon serial number and the name and address of the owner of the balloon.

5. Conditions for Flight of a Balloon:

- 5.1 No hot air balloon shall be flown unless it possesses a valid Certificate of Airworthiness.
- 5.2 Hot air balloons engaged in commercial operations possessing a Type Certificate issued or validated by the DGCA or export C of A issued by a country whose airworthiness standards are equivalent and acceptable to DGCA may be granted C of A in Normal Category subject to compliance of requirements contained in CAR Section 2 - Series 'F' Part III and such other conditions as may be prescribed.
- 5.3 Hot air balloons used for personal flying by pilot(s) themselves, even if they carry sponsor's banners, need not have a Type Certificate. Such balloons shall be issued C of A in Special Category, Sub-Division Experimental category.
- 5.4 The Certificate of Airworthiness may remain valid for period as specified in CAR Section 2 Series 'F' Part III unless withdrawn or suspended earlier by the Director General if he is satisfied that reasonable doubt exists as to safety of the balloon in question.

The Certificate of Airworthiness of a balloon shall automatically stand suspended :-

- (i) If the balloon is not inspected and certified by Approved/licensed personnel at intervals prescribed in the approved Maintenance programme;
- (ii) If mandatory modifications/inspections as required by the Director General are not carried out;

- (iii) If modifications/repairs affecting airworthiness of the balloon and not approved by the manufacturer or by the Director General, are carried out; and
- (iv) If a balloon suffers major damage or reveals any major defect which may render the machine unsafe for flight and shall remain suspended till such time the above deficiencies are removed.

5.5 Application for the issue of Certificate of Airworthiness shall be made to the DGCA **hqrs.** on the proper form, together with prescribed fee.

5.6 The Director General may issue/ renew the Airworthiness review certificate in respect of a balloon for a maximum period of 12 months, after such inspection and subject to such conditions as may be prescribed. Application for issue/renewal of ARC shall be made to the Regional Airworthiness Office together with the prescribed fee.

6. Certification :

6.1 No balloon shall be flown unless during 24 hours preceding the "lift off", it has been **inspected in accordance with an approved schedule and the "certificate of release to service" issued.**

6.2 After issue of the '**certificate of release to service**', the pre-flight inspection shall have to be carried out before the first flight of the day by an appropriately licensed pilot, in accordance with a duly approved schedule. The pilot may also carry out the next higher inspections up to 25 hrs. in accordance with duly approved schedules.

6.3 The higher than 25 hrs. inspection schedules and overhaul of the balloon and its components shall be carried out by holders of AME license, endorsed for a particular type of balloon, or persons specially approved or authorized to inspect/repair/modify and certify the airworthiness to the extent and scope of their license/approval permits.

6.4 The **Certificate of release to service** shall be made in duplicate, one copy of which shall be handed over to the pilot and the other shall be retained by the operator for a period of one month unless directed otherwise by DGCA.

7. The Director General may require the balloon to be weighed at the time of renewal of **ARC** or at any other time considered necessary.

8. Flight Manual:

The operating limitations, normal and emergency procedures and other pertinent information, peculiar to balloon operating characteristics are provided in the Flight Manual, furnished with each balloon or by a placard in the balloon, that is clearly visible to the pilot. The cockpit and emergency checklist in laminated form shall be carried on board, unless they form a part of the Flight Manual. The Flight Manual where applicable, shall always be carried on board.

9. Service Documents, Manuals, Repair Schemes etc. :

- 9.1 Operators / organizations shall not undertake maintenance/overhaul of balloons unless they possess the manufacturers' maintenance/overhaul manuals and have an arrangement for receiving amendments thereto.
- 9.2 Repairs, modifications and overhaul of balloons and balloon components shall be performed in accordance with approved drawings/ repair schemes and overhaul instructions issued by the manufacturers. In certain cases, the Director General may accept repairs carried out conforming to standard aeronautical practices.
- 9.3 Compliance of Service Bulletins / Instructions, mandatory inspections/modifications issued by the makers or the Director General will be governed by the requirements of Section 2 - CAR Series 'M' Part I.

10. Log Books :

10.1 A Journey log Book in respect of each balloon indicating details of every flight, like the date of flight, lift off time, total flight time, the places of departure and arrival, shall be maintained. The entries in the log book shall be certified by the pilots undertaking the flights.

10.2 A Balloon log book shall be maintained by every operator to keep a record of the flying, modification and other repair work carried out on the balloon.

10.3 Maintenance/Overhaul :

The persons engaged in maintenance/ overhaul/ inspection/ repair of the balloons and the balloon components shall be licensed/ approved by the DGCA.

Records of inspection, overhaul, replacements, repairs, modifications and flight times shall be maintained in appropriate balloon log-book. The entries in the log book shall be certified by a licensed/approved person.

10.4 The records shall be preserved for the following periods :

- (i) Balloon Log book until such time the balloon is permanently withdrawn and its C of A is canceled by the Director General. Provided that in case the balloon is involved in an accident resulting in damage beyond economical repairs, the balloon log book shall be preserved for a period of two years after the accident or for such period as investigating the accident.
- (ii) Procedure/Worksheet for at least five year after the pertaining to balloon completion of work.
- (iii) Records/Worksheet One year after the component pertaining to lited is permanently withdrawn from use to lifed components

11. Manual Requirements :

All balloon operators (including private operators) are required to prepare **CAME/MOM/MOE** as applicable for the guidance of their maintenance staff which will cover the following aspects :

- (i) All approved maintenance schedules and if they are too bulky then only the nomenclature of the approved maintenance schedules along with reference number and date of approval be quoted in the Manual and approved schedules be stocked separately.
- (ii) Safety requirements required to be followed during balloon handling on the ground or at the time of refueling/defueling, or while being housed inside hangar.
- (iii) Procedure for keeping balloon log books/work sheets up-to-date and preservation of the same and individuals, authorised to certify these documents.
- (iv) Procedure of recording/reporting of all defects observed during inspection or during flight and recording of rectification work undertaken.
- (v) Occasions when test flights would be carried out.
- (vi) Procedure of embodying mandatory modifications/inspections.

Such Manuals are to be submitted to the Regional Airworthiness Office for the scrutiny. The manuals prepared by operators, other than private operators, shall have to be approved by DGCA, **in accordance with CAR M.**

12. Documents to be carried on Board in Flight :

- (1) Journey Log Book.
- (2) Radio-Telegraph apparatus, if applicable.
- (3) Certificate of Airworthiness and **Airworthiness review certificate.**
- (4) Certificate of Registration
- (5) Appropriate licence for the crew
- (6) Cockpit and Emergency Check List in laminated form or Flight Manual (if applicable).
- (7) Weight Schedule, duly approved and to be displayed at a prominent place.

13. All defects observed on ground and during flight shall be recorded in a register against which the rectification action taken, shall also be appended by a licensed/approved person and signed and dated. The requirements of CAR Section 2 - Series 'C' Part III shall be observed.

14. Instruments & Equipment to be carried by Balloons in flight:

- (1) Hand fire extinguisher of an approved type, in the main compartment carrying personnel.
- (2) Safety harness for each personnel on board. The harness for each person need not be provided for gondola or basket type of balloons.
- (3) A compass
- (4) An altimeter
- (5) A rate of climb indicator.

- (6) First Aid Kit (as per CAR Series X Part III)
 - (7) A fuel quantity gauge.
 - (8) An envelope temperature indicator.
 - (9) Burner relighter.
 - (10) Two way R/T Communication Equipment.
15. The operation of the balloon flights will only be undertaken during day time under V.F.R conditions.
16. Test Flights :

The Test Flights shall be carried out in accordance with the requirements of CAR Section 2, Series 'T' Part II.

(Smt. M. Sathiyavathy)
Director General of Civil Aviation

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APPENDIX 'I'

PROFORMA DETAILING PARTICULARS FOR VERIFICATION BY APPLICANT FOR MANUFACTURE, PURCHASE, REGISTRATION AND OPERATION OF MICROLIGHT AIRCRAFT/HOT AIR BALLOONS

WARNING :- SUPPRESSION OF MATERIAL OR FACTUAL INFORMATION IN THIS FORM SHALL BE A DISQUALIFICATION.

1. (a) Name of Applicant in Full (in Block Letters)

Surname	Name	Aliases, if any
_____	_____	_____

(b) Parentage :

Surname	Name	Aliases, if any
_____	_____	_____

2. Present address in full, including Police Station :

3. (a) Permanent address in full, including Police Station :

(b) If originally a resident of a country other than India, address in that country and the date of migration to India :

4. Nationality : _____

5. Date and place of birth, with full address :

6. Profession/occupation after the age of 18 years :

7. Particulars of places, with full address, where the applicant has resided for more than a year during the preceding ten years :

8. (a) Particulars of relatives - Indians and non-Indians - working in foreign Missions, foreign organisations including foreign concerns, with full details :

(b) Particulars of relatives living abroad with their full address :

9. Is the applicant or any of his relatives a member of social or cultural organisation which is associated with or assisted by a foreign Mission or organisation?

10. Has the applicant visited a foreign country recently? If so, details thereof :

11. Has the applicant ever been arrested, prosecuted, kept under detention, or convicted by a court? Give details :

Certified that the information furnished in this proforma is correct and complete to the best of my knowledge and belief. I am aware that furnishing of wrong information or suppression of factual or material information will dis-entitle me from grant of the licence/permit.

Signature of the Applicant

DATE :

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