



GOVERNMENT OF INDIA
OFFICE OF THE DIRECTOR GENERAL OF CIVIL AVIATION
OPPOSITE SAFDARJUNG AIRPORT, NEW DELHI - 110 003

CIVIL AVIATION REQUIREMENT
SECTION 2 – AIRWORTHINESS
SERIES F PART XV

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SUBJECT: Requirements for Manufacture, Registration and Airworthiness Control of Hot Air Balloons.

1. APPLICABILITY:

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

2. 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.

3. MANUFACTURE OF HOT AIR BALLOONS

- 3.1 The standards prescribed in FAR Part 31 for the design shall be the minimum requirements for airworthiness of the hot air balloons.
- 3.2 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.
- 3.3 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.
- 3.4 Before a person/firm undertakes manufacture of hot air balloon, a clearance from the local police authorities regarding his character/ antecedents shall be obtained.
- 3.5 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.
- 3.6 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.
- 3.7 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.
- 3.8 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.
- 3.9 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.
- 3.10 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 authorized as specified at Para 7.3 of this CAR.

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-F, 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.
- 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. SECURITY ASPECTS:

- 5.1 The hot air balloon 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 be granted by the DGCA after verifying the antecedents of the prospective buyers from Ministry of Home Affairs through local Police Authorities.
- 5.2 Any person or firm intending to acquire/manufacture or register a hot air balloon is required to obtain security clearance from Ministry of Home Affairs (MHA) through DGCA and comply with the requirements specified by MHA. The security and operational requirements of MHA are detailed in Annexure - II to this CAR.
- 5.3 The prospective manufacturer / owner of hot air balloon shall submit duly filled proforma as specified at Annexure - I to this CAR to DGCA HQRS (Directorate of Airworthiness). The request of the applicant for security clearance shall be forwarded to MHA after ensuring that the application is complete in all respect. Receipt of security clearance of the applicant from MHA will be informed by the DGCA.
- 5.4 The hot air balloon shall be operated within the area specified to the operator as per their permit or otherwise. List of area used for operation of hot air balloon is given in Annexure – III.
- 5.5 The owner/operator shall be responsible for the safe custody, security and access control to the hot air balloon. Notwithstanding to the above owner / operator of hot air balloon shall comply with the security related directives issued by the Ministry of Home Affairs from time to time.

6. CONDITIONS FOR FLIGHT OF A BALLOON:

- 6.1 No hot air balloon shall be flown unless it possesses a valid Certificate of Airworthiness and Airworthiness Review Certificate (ARC).
- 6.2 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.
- 6.3 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.
- 6.4 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 authorised Approved/licensed personnel prescribed in the approved Maintenance program;
 - (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.
 - (v) ARC is not valid.
- 6.5 Application for the issue of Certificate of Airworthiness shall be made to the DGCA hqrs. on the proper form, together with prescribed fee.
- 6.6 DGCA may issue/ extend the Airworthiness review certificate (ARC) 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 renewal/extension of ARC shall be made to the Regional Airworthiness Office together with the prescribed fee.

7. CERTIFICATION:

- 7.1 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 in accordance with CAR-M, Subpart - F or CAR-145.
- 7.2 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.
- 7.3 The higher than 25 hrs. inspection schedules and overhaul of the balloon and its components shall be carried out by an aircraft maintenance engineer holding a licence in Category A or Category B1 or Category B3 or an person specially authorised by the Director-General.
- 7.4 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.
8. The Director General may require the balloon to be weighed at the time of renewal of ARC or at any other time considered necessary.

9. FLIGHT MANUAL:

- 9.1 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.

10. SERVICE DOCUMENTS, MANUALS, REPAIR SCHEMES etc.:

- 10.1 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.
- 10.2 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.
- 10.3 Compliance of Service Bulletins / Instructions, mandatory inspections/ modifications issued by the makers or the Director General will be governed by the requirements of CAR M.

11. LOG BOOKS:

11.1 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.

11.2 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.

11.3 **Maintenance/Overhaul Records:** 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/authorised person.

11.4 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 cancelled 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 required by a competent authority investigating the accident.
- (ii) Procedure/Worksheet pertaining to balloon – For at least five year after the completion of work.
- (iii) Records/Worksheet pertaining to lifed components – One year after the component pertaining to lifed is permanently withdrawn from use to lifed components.

12. MANUAL REQUIREMENTS:

12.1 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 refuelling/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.

12.2 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.

13. DOCUMENTS TO BE CARRIED ON BOARD IN FLIGHT:

- a) Journey Log Book.
- b) Radio-Telegraph apparatus, if applicable.
- c) Certificate of Airworthiness and Airworthiness review certificate.
- d) Certificate of Registration
- e) Appropriate licence for the crew
- f) Cockpit and Emergency Check List in laminated form or Flight Manual (if applicable).
- g) Weight Schedule, duly approved and to be displayed at a prominent place.

14. 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/authorised person and signed and dated.

15. INSTRUMENTS AND EQUIPMENT TO BE CARRIED BY BALLOONS IN FLIGHT:

- a) Hand fire extinguisher of an approved type, in the main compartment carrying personnel.
- b) Safety harness for each personnel on board. The harness for each person need not be provided for gondola or basket type of balloons.
- c) A compass
- d) An altimeter
- e) A rate of climb indicator.
- f) First Aid Kit (as per CAR, Series-X, Part-III)
- g) A fuel quantity gauge.
- h) An envelope temperature indicator.
- i) Burner relighter
- j) Two way R/T Communication Equipment.

16. The operation of the balloon flights will only be undertaken during day time under V.F.R conditions.

17. TEST FLIGHTS:

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



(B. S. Bhullar)
Director General of Civil Aviation

Annexure – 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:

12. Security Clearance from Local Police Authority:

13. Area of operation of Hot Air Balloon as per Annexure-III of this CAR:

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.

Place:

Date:

(Signature of the Applicant)

Note: *The application (4 sets in original) along with documentary proofs of items at S.No. 1, 2, 3, 4, 5 and 12 are required to be submitted by the applicant.*

Annexure – II

MHA REQUIREMENTS

A. Security Requirements:

1. Security program shall be approved by BCAS for security oversight before issue of Certificate of Airworthiness.
2. Security measures approved by BCAS shall be adopted at the place of parking as well as at the place of operation before each flight by the owner/operator and shall is responsible for the safe custody, security and access control of the aircraft.
3. The operator shall maintain proper log Book relating to operation and submit the same to the office of District Magistrate on quarterly basis.
4. Details of approved owners/operators should be made available along with Certificate of Airworthiness to local district authorities i.e. District Magistrate and Superintendent of Police to monitor the activity.
5. The owner / operator shall not lease/ rent / lend the hot air balloon.
6. No hot air balloon shall carry any remote sensing appurtenances / weapon / photography/ video recording equipment without the express permission of MHA except those equipment required for the safe operation of the aircraft or specified in this CAR.
7. The hot air balloon shall not be sold or disposed of in any way to any person or firm without production of an NOC from the DGCA. The NOC shall be granted by the DGCA on production of security clearance from MHA.
8. Local Police to ensure that no security breach has been done by the operator.

B. Equipment Requirements:

1. Operator shall install GPS System for Tracking and Monitoring by MHA and is required to be registered with MHA.
2. Operator shall install two way communication System for communication between hot air balloon and Ground Monitoring station of MHA.

C. Operational Restrictions:

1. The hot air balloon shall be operated with in the area specified in Annex – III of this CAR. New area for operations may be added in the list as per the requirement of the operator after obtaining necessary clearances from stake holders such as defence establishment, airport operator, flying clubs etc.
2. The maximum horizontal range of operation shall be restricted to 25 km radius circle in the pre-defined area and vertical range up to 7,000 feet above the ground level.

3. The hot air balloon shall be parked at the designated airports/ approved places only.
4. Copy of C of R (usual station) should be forwarded to district administration and/or AAI for monitoring the flying activities in their area

D. Penalties:

1. Breach of compliance to any of the requirements would attract penal action including imposition of penalties.
2. Breach if any is noticed by MHA/any Govt. Authority, the same shall be intimated to the Authority concerned for taking necessary action including imposition of penalties under the applicable statutory provisions.

Annexure – III

LIST OF IDENTIFIED AREA FOR OPERATION OF HOT AIR BALLOON

Northern India

S. No.	Name of place	Area of operation	Co-ordinates
1.	Rajasthan	Jaipur	26.8242° N
			75.8122° E
2.	Agra	Railway Ground	271104.18 N
			780202.97 E
3.	Allahabad	Sirsa	251533.19 N
			820533.99 E
4.	Bikaner	Samta Nagar	280235.10 N
			731959.47 E
5.	Damdama	Damdama Lake	281611.38 N
			770711.41 E
6.	Dedhradun	Race Course Valley	301816.03 N
			780226.28 E
7.	Dharamsala	Jawahar Nagar	321142.61 N
			761931.58 E
8.	Jaipur	Amer	265853.10 N
			075514.73 E
9.	Jaisalmer	Narsigon ki Dhani	263956.23 N
			705525.24 E
10.	Jhunjhunu	Shekhawati	280746.84 N
			752347.25 E
11.	Jodhpur	Barli	261848.02 N
			725552.70 E
12.	Laddakh	Pangong Lake	335523.30 N
			782623.42 E
13.	Leh	Leh City	340949.92 N
			773528.42 E
14.	Lucknow	Chowk Stadium	265208.03 N
			805432.65 E
15.	Manesar	Manesar	282146.96 N
			765721.58 E
16.	Mount Abu	Polo Ground	243519.37 N
			724229.63 E
17.	Mussoorie	Mall Road	302735.65 N
			780401.26 E
18.	Neemrana	Madhosinghpura	275935.58 N
			762314.54 E
19.	Pushkar	Mela Ground	263000.00 N
			743300.00 E
20.	Ranthambore	Itawa	260000.00 N

S. No.	Name of place	Area of operation	Co-ordinates
			761400.00 E
21.	Srinagar	Athwagan	340215.70 N
			745234.53 E
22.	Udaipur	Fateh Sagar Lake	243550.17 N
			733955.42 E
23.	Varanasi	Ramnagar	251805.44 N
			830102.00 E
24.	New Delhi	Balloon Port, Damdama Gurgaon, Haryana	28 18 N
			77 07 E
25.	Bir-Biling	Bir-Biling	32242.64 N
			764326.60 E
26.	Khimsar	Kheenvsar	265834.55 N
			732353.21 E
27.	Mandawa	Mandawa	280346.00 N
			750841.39 E

Southern India

S. No.	Name of place	Area of operation	Co ordinates
1.	Hyderabad	Gachibowli	172648.11 N
			782040.80 E
2.	Pondicherry	Kalapet	120134.93N
			795102.96 E
3.	Trivandrum	Trivandrum International Stadium	83417.28 N
			765303.31 E
4.	Hampi	Krishnapura	151949.52 N
			762720.05 E

Eastern and North-Eastern India

S. No.	Name of place	Area of operation	Co ordinates
1.	Bhubaneswar	Dadhapatna	202440.98 N
			854959.38 E
2.	Bodhgaya	Ashok Nagar	244730.77 N
			845842.71 E
3.	Imphal	Polo Ground	244822.83 N
			935611.17 E

Western India

S. No.	Name of place	Area of operation	Co ordinates
1.	Ahmedabad	Rajpath Club	230205.67 N
			723028.69 E
2.	Baroda	Gorwa Road	221926.87 N
			73100.39 E
3.	Bhopal	Govindpura	231357.66 N

S. No.	Name of place	Area of operation	Co ordinates
			772708.24 E
4.	Goa	Quepem	151303.80 N 740346.66 E
5.	Lonavala	Talegaon	184953.93 N 731658.26 E
6.	Pune	Race Course	183036.95 N 735335.78 E
7.	Surat	Bhallai	211059.79 N 724042.41 E

Note: *The above List of Identified Area for Operation of Hot Air Balloon excludes the restricted areas notified by various Government Agencies.*

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