

ANNEXURE 2



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

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Subject: Guidelines for obtaining Unique Identification Number (UIN) & Operation of Civil Unmanned Aircraft System (UAS)

1. INTRODUCTION

The UAS consists of an Unmanned Aircraft (UA), a Remote Pilot Station (RPS), Command and Control (C2) Link, the maintenance system and the operating personnel. Unmanned aircraft are either pilotless or do not carry pilot(s) on board. Remotely Piloted Aircraft (RPA), Autonomous Aircraft and Model Aircraft are various types of unmanned aircraft.

ICAO Circular 328 highlights various issues and complexities involved with respect to civil UAS such as; regulatory issues, legal matters, operations, certification of aircraft and systems, personnel licensing, etc. ICAO has also issued Doc 10019 AN/507: "Manual on Remotely Piloted Aircraft Systems (RPAS)" which provides guidance to contracting states. ICAO has amended Annex 2 (Rules of the Air) to cover Remotely Piloted Aircraft (RPA), which is an unmanned aircraft piloted from a remote pilot station. However, at present Standard and Recommended Practice (SARPs) in Annex 6 (Operations) and Annex 8 (Airworthiness) on UAS are not available.

Civilian use of UAS includes damage assessment of property and life in areas affected with natural calamities, surveys; critical infrastructure monitoring including power facilities, ports, and pipelines; commercial photography, aerial mapping, etc. They are also increasingly proliferating into recreational field and are likely to be used in many other domains.

UA operations present problems to the regulator in terms of ensuring safety of other users of airspace and persons on the ground. However, in view of technological advancements in UAS over the years and their increased civil applications, it has become necessary to develop guidance material to regulate this activity.

This Circular lays down guidelines for obtaining UIN & operation of civil UAS. All the UAS operators are required to adhere to these guidelines in the interest of flight Safety. DGCA will register all civil Unmanned Aircraft and issue a UA Operator Permit (UAOP) on case to case basis.

2. DEFINITIONS

Autonomous aircraft *	An unmanned aircraft that does not allow pilot intervention in the management of the flight.
Command and Control (C2) Link	The data link between the UAV and the remote pilot station for the purposes of managing the flight.
Controlled Airspace #	Airspace of defined dimension within which air traffic control service is provided to flights in accordance with the airspace classification.
Model Aircraft	Unmanned Aircraft (UA) without payload used for recreational purposes only.
Payload	All components of equipment on board a UAV that are not needed for the flight or for its control. Its transport aims exclusively to fulfill a specific mission.
Pre-flight Inspection	Set of manufacturer recommended system and components functional tests to be performed prior to any launch.
Remote Pilot	A person charged by the operator with duties essential to the operation of a remotely piloted aircraft and who manipulates the flight controls, as appropriate, during flight time.
Remotely Piloted Station (RPS)	The component of the remotely piloted aircraft system containing the equipment used to pilot the remotely piloted aircraft.
Remotely Piloted Aircraft (RPA)	An unmanned aircraft which is piloted from a remote pilot station
Remotely Piloted Aircraft System (RPAS)	A remotely piloted aircraft, its associated remote pilot station(s), the required command and control links and any other components as specified in the type design.
RPA observer	A trained and competent person designated by the operator who, by visual observation of the remotely piloted aircraft, assists the remote pilot in the safe conduct of the flight.
Unmanned Aircraft (UA)	An aircraft which is intended to operate with no pilot on board.
Unmanned Aircraft System (UAS)	An unmanned aircraft, its associated remote pilot station(s), the required command and control links and any other components as specified in the design.
Visual line-of-sight (VLOS) operation.	An operation in which the remote pilot or RPA observer maintains direct unaided visual contact with the RPA.

- *have no official status within ICAO. # Controlled airspace is a generic term which covers ATS airspace Classes A, B, C, D and E as described in Annex 11, 2.6.*

3. CATEGORY OF UA

Civil UA are classified in accordance with weight of UA as indicated below:

- i) Micro : Less than two kg.
- ii) Mini : Greater than two kg and less than 20 kg.
- iii) Small : Greater than 20 kg and less than 150 kg.
- iv) Large : Greater than 150 kg.

Comments: Model planes for recreational use are defined under UA' s with qualifications. For better clarity A separate category for model air planes for hobby / recreation should be created, with qualifying descriptions if required with further sub groups for :

01. Fixed Wing & Helicopters

02. Drones, Multicopters, & FPV'

This would enable clear classified exemptions from general UA' s rules, as may be applicable.

It is further recommended that to simplify, separate rules/ guidelines for Model Aircrafts should be considered independent of the various conditions laid down for UA' s requiring compliance thereof. Other countries have adopted this route. (Ref. FAA' s 'Model Aircraft Operation' standards - modified 15/3/16). Alternative provisions should be made within the proposed policy to exempt model aircrafts from the statutes governing the flight of general purpose UA' s & UAS subject to their compliance to a more simplified charter applicable for Hobby and recreational flying.

4. ISSUE OF UNIQUE IDENTIFICATION NUMBER (UIN)

4.1. All unmanned aircraft intended to be operated in India will require an Unique Identification Number (UIN) issued from DGCA. The UIN can be granted only to:

- a) a citizen of India;
- b) or •a company or a body corporate provided that:
 - i) It is Registered and has its principal place of business in India
 - ii) its chairman and at least two-thirds of its directors are citizens of India; and,
 - iii) its substantial ownership and effective control is vested in Indian nationals;

- 4.2. Following documents are required to be submitted to DGCA for issue of UIN:
 - a) Address of Operator along with contact details with valid identity proof. In case of a company/organization, TIN number will be accepted;
 - b) Purpose of operation of UA;
 - c) Specification of UAS (manufacturer name, type, model number, year of manufacture, weight and size, type of propulsion system, flying capabilities in terms of maximum endurance, range and height, etc. including details of equipment);
 - d) Verification of character and antecedents of the operator and remote pilots from local sub-divisional police office;
 - e) Permission for all frequencies used in UAS operations from Department of Telecommunication (Wireless Planning and Coordination Wing);
 - f) Copy of Unmanned Aircraft Flight Manual (UAFM);
 - g) Copy of Manufacturer's maintenance guidelines for UAS;
- 4.3. The identification plate (made of fire proof material) inscribed with UIN and RF ID tag or SIM shall be affixed to the UA, and appropriate makes to identify ownership.

COMMENTS:

UIN-While we recognize the need for a monitoring mechanism for the UA' s in general, application of the same to model airplanes for hobby, en masse, is neither practical nor feasible:

- Small Model Aircrafts for hobby purposes are often toys in the hands of thousands of children, young enthusiasts. They could be flown indoors or outdoors. They are freely available in societies around the world with or without registered identities, & minimal controls. They are harmless and merely form means of plaything for children. To include them in the scope of UA' s and universally impose such harsh conditions of registration would make a mockery of the system and serve no purpose except to kill the hobby for our budding youth.
- Even in the hands of more mature hobby/recreational users the conditions are froth with innumerable anomalies:
- Aero Models often have a very short life cycle and a very high rate of redundancy. May be just a flight or two. In such a case what happens to an aircraft specific UIN?. Does it become redundant and does the enthusiast have to every time surrender the old one and obtain a new UIN for every change / new model that

- he/she may acquire?
- If a hobbyist owns multiple nos. of model aircrafts, does the person need to get an individual UIN for each aircraft ??
 - Akin to this hobby, Very often a RC Model Plane is built by the hobbyist themselves. How can it meet the above mentioned requirements to qualify for an UIN. Therefore should hobby building be discontinued ??
 - The sport of Aero Model Flying is widely being practiced in our country and world wide. While it is estimated that we have approx. 22000 model aircrafts in India, Germany is known to have 160000 flying Models while USA had approx. 1.6 million hobby Aero models in 2015 Should the state machinery assume regulatory control of each of such models ?. It would serve no purpose & except be a exercise in futility.

Therefore Model Planes used for sport / hobby purposes should be exempt from the preview of UIN code as may applicable to other forms of UA Or UAS. If regulatory controls are felt absolutely essential for purpose of identification, in case of an accident or other security reasons, a simplerlink should be established to the owner / flyer of the model with assignable responsibility thereof. This could in turn be monitored either by DGCA or through local bodies / Aero modeling clubs in a suitable manner. Such practices have recently been introduced in some other nations including USA through FAA directives. (Ref. FAA Circular # 8900.338 dated 22/12/15)

5. UA OPERATOR PERMIT (UAOP)

- . 5.1. All civil UA operations at or above 200ft AGL in uncontrolled airspace for any purpose whatsoever will require UAOP from DGCA. .
- . 5.2. Operation of civil UA in controlled airspace is restricted. .
- . 5.3. Following entities will not require UAOP from DGCA .
 - a) Civil UA operations below 200ft AGL in uncontrolled airspace and clear of notified prohibited, restricted and danger areas as well as Temporary Segregated Areas (TSA) and Temporary Reserved Areas (TRA). In addition, the operator shall obtain permission from local administration, the concerned ADC.
 - b) Model aircraft operating below 200ft AGL in uncontrolled airspace & indoor UA for recreational purposes only. (Aero modelling activities carried out within the premises of educational institutions will be considered as recreational purposes).

COMMENTS:

Height limitation of 200 ft is grossly inadequate for flying of RC Model

Planes for Hobby purposes. Specially fixed wing aircrafts. For e.g. in case of gliders one may not even reach sufficient thermals to enable meaningful flights.

- a. So also a ceiling of 200 ft. leaves no room for a model flyer to recover out of a sport or 3D maneuver. Provision has also to be considered for natural flora and fauna in the flying areas, Ordinary trees themselves can easily rise to 30-40 ft. Such low height ceiling, is in fact likely to increase the risk of accidents. **A Height ceiling of at least 600 ft. is necessary to enable safe tenable operation of model planes for hobby and recreation purposes**
- b. Lower flying heights may be probable for drones & multi copters, but however fixed wing aircrafts, specially jet models, need window height of at least upto 700 ft. to be able to fly safely and comfortably. Visibility not being a problem, In non-controlled air space why should the development of this hobby be made to suffer in this manner?? Many countries have refrained from imposing any ceiling limits for model aircrafts flying in non controlled and VLOS conditions. Others have permitted much more liberal operations (approx. 150 Mtrs.)

6. PROCEDURE FOR ISSUANCE OF UAOP

6.1. The operator having an UIN intended to conduct civil operation of a UA at or above 200ft AGL in uncontrolled airspace shall submit his application for UAOP to DGCA along with following documents:

- a) Permission from ANS provider (civil/defense); .
 - b) Permission of the land / property owner (when operated below 200 ft AGL .and area used for take-off and landing of UA); .??
 - c) Details of Remote Pilot(s) and training records; .
 - d) Insurance details if applicable; .
 - e) Security Clearance of firms/ operator of UA from BCAS; .
- 6.2. The application shall be submitted at least 90 days prior to actual conduct of UA operations to Director Regulations & Information (DRI), O/o DGCA for issue of UAOP. .
- 6.3. Upon being satisfied on the following issues, DGCA may issue UAOP for UA operations:

- a) That the operator has produced and will keep up to date UAFM, specifying procedures to be followed by remote pilots and other relevant persons to ensure the safety of UA operations;
 - b) That the operator has established maintenance system, details of which will be kept up to date at all times.
- 6.4. The UAOP shall contain at least the following information:
- a) Name and location (main place of business) of the operator;
 - b) Date of issue and period of validity;
 - c) Scope and description of the type of operations authorized;
 - d) Area of operation;
 - e) Type(s) of UA authorized for use;
 - f) Unique Identification Number (UIN) of UA;
 - g) Special limitations, if any (e.g. not over populous areas, etc.);
 - h) List of approved personnel for operation of UAS (security clearance of personnel will be required);
 - i) Insurance validity with respect to all liabilities;
- 6.5. Validity of UAOP shall be for period of two years from date of issue and is not transferrable. Renewal of NOC shall require security clearance from MHA & BCAS.
- 6.6. Copy of UAOP shall be forwarded to MHA, BCAS, IAF, ANS Provider (AAI/ MoD), and Local Administration/ concerned state's DGP/ Local ASP for information.
- 6.7. Import permission shall be obtained from DGCA based on which DGFT shall provide licence for import of UAS.

COMMENTS:

Model planes their spares and accessories used for recreational purposes, should be specifically exempt from DGCA' s approval for imports.

- Currently Import of model planes, spares and accessories, is freely allowed under ITC chapter 95.03 covering the general category of toys, games& sportsrequisites with conditions of confirmation to IS standards.

- Routing such imports approvals through DGCA would lead to virtual channelizing of toys with inevitable delays and bureaucratic procedures. Due to the variety of imports, as also constant requirements of spares and add-ons, by any consumer hobbyist, it will pose serious constraints for small users and become a major deterrent to the promotion of model flying.
- 6.8. DGCA may impose additional requirements/ waive off requirements depend upon justification on case to case basis. .

7. SECURITY ASPECT

- 7.1. The UAS (issued with UIN) shall not be sold or disposed of in any way to any person or firm without permission from DGCA. .
- 7.2. The owner/operator shall be responsible for the safe custody, security and access control of the UAS. In case of loss of UA, the operator shall report immediately to local administration/ police, BCAS and DGCA. .
- 7.3. The operator shall ensure that all security measures are in place before operation of each flight. .
- 7.4. Owner/operator is responsible for notifying any incident/accident during flying of the UA to Director of Air Safety, DGCA and BCAS within 24 hours. .

COMMENTS:

Model Aircrafts for hobby recreational purposes should be exempt from provisos of Clause 7 read together with its sub clauses.

- Life span of Model Aircrafts is a highly subjective matter and reporting every loss by every user, including children, is impractical and serves no purpose.

8. TRAINING REQUIREMENTS FOR REMOTE PILOTS

- 8.1. Remote pilot should have attained 18 years of age and have thorough ground training equivalent to that undertaken by aircrew of manned aircraft or a PPL holder (aeroplane/ helicopter) with FRTOL. .
- 8.2. Remote pilots shall undertake thorough practical training in the control of a UA in flight, which may consist of a proportion of simulated flight training. .
- 8.3. The training should enable the remote pilot to demonstrate that he/she can control a specific UA throughout its operating conditions, including safe recovery of UA in case of emergencies and system malfunction. .
- 8.4. The above training requirements for remote pilots are not applicable for micro category UA & recreational flying.

. Comment:

Please clarify that the exemption applies to the entire scope of Para 8 read together with its sub paras. .

9. UAS MAINTENANCE

- . 9.1. Maintenance and repair of UAS should be carried out in accordance with manufacture's approved procedures. .
- . 9.2. Maintenance of the ground control equipment should be in accordance with manufacture's recommended period of inspection and overhaul, as applicable. .
- . 9.3. The remote pilot shall not fly the UA unless before the flight he/she is reasonably satisfied that all the control systems of UA including the radio link are in working condition. .
- . 9.4. The UAOP holder shall maintain records of each UA flight and makes such records available to the DGCA on demand. .

. Applicability to model aircrafts flown for Hobby/ Recreational purpose not practical/required

10. REQUIREMENT FOR OPERATION OF UA

- . 10.1. Irrespective of weight category, the UAS operator shall intimate Local Administration, ATS unit (for operations at or above 200ft AGL in uncontrolled airspace), BCAS, Aerodrome operator (if applicable) before commencement and after termination of operation. In the event of cancellation of UA operations, the operator shall notify the same to all appropriate authorities as soon as possible. .

. Comment:

Height Limit for Model Planes to be modified as per request stated in comments on para 5 above.

- . 10.2. The operator shall refer to Aeronautical Information Publication (AIP) and active NOTAM regarding details of notified prohibited, restricted and danger areas (airspace) including TRA and TSA. The operation shall be restricted to areas outside the boundaries (lateral and vertical) of above mentioned areas in the uncontrolled airspace. .
- . 10.3. The operator shall carry out safety assessment of the UA operations including the launch/ recovery sites. The UAS operation site (including emergency operation zone and any safety zone for the operations of the UAS) shall be under the operator's full control. .
- . 10.4. Privacy and Protection of Personnel/ property/ data shall be given due importance. .
- . 10.5. UA shall be operated in accordance with the rules governing the flights of

manned aircraft as specified in CAR Section 9, Series C, Part I (Rules of the Air).

10.6. UA should be able to comply with regulations applicable to the class of airspace within which they intend to operate as specified in CAR Section 9, Series E, Part I (Air Traffic Services).

10.7. For operations at or above 200ft AGL in uncontrolled airspace, the UA operator shall file a flight plan and obtain necessary clearances with concerned ATS unit and ADC.

Comment:

Height Limit for Model Planes to be modified as per request stated in comments on para 5

10.8. The flight plan shall contain the following information, but not limited to the following: .

a) Description of the intended operation (to include type of operation or purpose), flight rules, visual line-of-sight operation, date of intended flight(s), point of departure, destination, cruising speed(s), cruising level(s), route to be followed, duration/frequency of flight.

b) Performance characteristics of UA, including operating speed, maximum climb rate, maximum rate of descent, maximum turn rate, maximum range and endurance. .

c) Number and location of remote pilot stations. .

d) Fixed Payload information/description. .

e) Proof of adequate insurance/liability coverage. .

f) Contact number of the remote pilot and/ or RPS in field 18 of the Flight Plan. .

10.9 The UAV shall enter the controlled airspace only with the prior approval of the ANS provider, which will be in the form of an airways clearance. The SOP shall contain take-off/landing procedure, collision avoidance procedure, noise abatement, flight plan filing, local airspace restriction, right-of-way rules, communications requirements, UA emergency procedures, pre co-ordination and procedures necessary to safely recover UA through controlled airspace in case UA system failure precludes the ability to remain outside controlled airspace, etc. AIP Supplement of AAI may be referred for flying outside the control airspace. .

10.10 Prior to the operations of UA, the operating personnel shall be in coordination with the appropriate ATS Authority, and Local police station probably through VHF/ landline/ two mobile phones with independent service providers. .

10.11 Remote pilots should prefix RPA call signs with the word UNMANNED during voice communications between ATC and the remote pilot station. .

. Comments:

The provisos of para 10.8 through 10.11 should not apply to recreational model flying in Uncontrolled airspace and therefore should be exempt from the scope of the said clauses.

- . 10.12 The operator shall ensure that the UA is flown within 500m Visual Line of Sight (VLOS) during the entire period of the flight. (Applicable for micro and mini UA) .

. Comments:

With the condition of VLOS applied, further limiting the Max. distance should not be required. In any case a limitation of within 500m is grossly inadequate. For larger models and turbine powered models an standard operating radial distance of up to 1000m (with limitations on height) is essential.

- . 10.13 International operations of civil UAS (flying across the territory) and/or over water shall be strictly prohibited. The UA shall not be flown over the entire air space over the territory of Delhi (30km radius from RashtrapatiBhavan) and areas falling within 50 km from the international borders. Also, UA shall not be flown over other sensitive locations viz. nuclear stations, military facilities and strategic locations. .
- . 10.14 UA flight shall be conducted as per the manufacture's approved UAFM available with the remote pilot within the Remote Pilot Station (RPS). .
- . 10.15 UA shall be operated (as VFR flight only) when the following meteorological conditions exist:
- . a) During daylight with Visual Meteorological Conditions (VMC) having ground visibility of 5 km. .
 - . b) Surface winds of not more than 20 knots (measured using hand held anemometer at site). .
 - . c) Cloud base not lower than the approved altitude of operations. .
- . 10.16 The UAS operator shall not launch the UA when rain/ thunderstorm warning is in force. .
- . 10.17 The UAS operator shall have adequate means to ensure that the actual altitude flown is accurate. .
- . 10.18 The operator shall be responsible for ensuring that the UAV is operated safely and remains clear of air traffic including other UAs and obstructions except where operation in close proximity of obstacles has been authorized on the operator's UAOP . .
- . 10.19 The take-off and landing area should be properly segregated from public

access.

- . 10.20 Designated “safe areas” should be established by the UAS operator for emergency UA holding and flight terminations.
- . 10.21 UA shall not discharge or drop substances unless specially cleared and mentioned in UAOP. UA shall not carry any explosives/ dangerous goods, animals/ human payload etc.
- . 10.22 Operator shall ensure that no Radio Frequency Interference (RFI) is caused to air traffic operations and air navigation equipment.

. 10.23 The UA shall have following components/ equipment:

- a) Identification plate and/ or RF ID;
- b) SIM card slot for an app based tracking (Mandatory for Micro & Mini UA);
- c) SSR transponder (Mode ‘C’ or ‘S’) or ADS-B option (Mandatory for Small & Large UA);
- d) GPS/ INS (with option to GPS tracking and Geo Fencing);
- e) Detect and avoid capability (if required, operator shall engage an RPA observer)
- f) Return Home option (mandatory in the event of failure)

10.24 For operation of large UA, it is recommended that reporting of UA position by the ground control station in ICAO standard ATFM format to ATS/ AD agencies.

. Comments:

- . Aero Models, specially the fixed wing type and helicopters should be exempt from the obligations under clause 10.23 & 10.24 since the aircrafts for hobby and recreation purpose do not have auto navigational capabilities & do not carry or support such equipment.

11. LEGAL OBLIGATIONS

- . 11.1 UAOP issued by DGCA would not:
 - a) Confer on UAS operator any right against the owner or resident of any land or building on or over which the operations are conducted, or prejudice in any way the rights and remedies which a person may have in respect of any injury to persons or damage to property caused directly or indirectly by the UA. .
 - b) Absolve the operator/ remote pilot from compliance with any other regulatory requirement, which may exist under State or local law. .
- . 11.2 Any legal dispute as far as DGCA is concerned shall be settled at Delhi only. .

12 INSURANCE

All civil UAOP holders shall have insurance with the liability that they might incur for any

damage to third parties resulting from the accident/incident.

13 ENFORCEMENT ACTION

The UAOP issued by DGCA shall be cancelled or suspended at any time if in the opinion of the DGCA, the performance of the Remote Pilot /maintenance of UAS is no longer to an acceptable standard.

(Smt. M. Sathiyavathy)

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