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Following supplement is issued for information, guidance and necessary action.

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(To be inserted in ENR 1 General Rules and Procedures; Sub-section ENR 1.1 General Rules)

13 PROCEDURES FOR OPERATION OF CIVIL REMOTELY PILOTED AIRCRAFT SYSTEMS (RPAS) IN INDIAN AIRSPACE

13.1 INTRODUCTION

13.1.1 Remotely Piloted Aircraft (RPA) is an Unmanned Aircraft (UA), which is piloted from a Remote Pilot Station. A Remotely Piloted Aircraft, its associated Remote Pilot Station(s), Command and Control (C2) links and any other components form a Remotely Piloted Aircraft System (RPAS).

13.1.2 Regulation on Requirements for Operation of Civil Remotely Piloted Aircraft System (RPAS) was published through Civil Aviation Requirements Section 3 – Air Transport Series 'X' Part I Issue 1 dated 27 August 2018, referred to as “CAR” in this section.

13.1.3 The purpose of this section is to establish procedures to be followed for operation of civil RPAS remotely piloted from a Remote Pilot Station, in controlled and uncontrolled airspaces in India.

13.2 DEFINITIONS

- a) **Command and Control (C2) Link:** The data link between the Unmanned Aircraft (UA) and the Remote Pilot Station for the purpose of managing the flight.

- b) **Geo-fencing:** Feature in a software programme that uses the Global Positioning System (GPS) or radio frequency identification to define geographical boundaries.
- c) **Payload:** All components of equipment on board the Unmanned Aircraft that are not needed for the flight or its control. Its transport aims exclusively to fulfill a specific mission.
- d) **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.
- e) **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.
- f) **Unmanned Aircraft:** An aircraft, which is intended to operate with no pilot on board.
- g) **Visual Line-of-Sight (VLOS) operation:** Operation in which the Remote Pilot or RPA Observer maintains direct unaided visual contact with the remotely piloted aircraft.

13.3 GENERAL REQUIREMENTS

- 13.3.1 RPA operation shall be restricted to Indian territorial airspace with the exception that no RPA shall be operated:
 - a) beyond 500 m from coastline into the sea; and
 - b) within 25 km from International Border.
- 13.3.2 Remote Pilot Station shall be located on ground and shall not be onboard any moving or stationary vehicle, ship or aircraft.
- 13.3.3 Height of operation of RPA shall be restricted to below 400 ft AGL.
- 13.3.4 RPA operation shall be conducted within Visual Line of Sight (VLOS) of the remote pilot, only in Visual Meteorological Conditions (VMC) and within the tolerance limits on wind and precipitation specified by the manufacturer.
- 13.3.5 RPAS operation shall be conducted only during daylight; i.e. between sunrise and sunset.

13.3.6 Launch and recovery sites for RPAS operation, including emergency operation zone and any safety zone for operations shall be under the full control of the RPAS operator.

13.4 OPERATING RESTRICTIONS

13.4.1 No RPA shall be operated:

- a) Within a distance of 5 km from the perimeter of airports at Mumbai, Delhi, Chennai, Kolkata, Bengaluru and Hyderabad;
- b) Within a distance of 3 km from the perimeter of any civil, private or defence airports, other than those mentioned in Para 13.4.1 a);
- c) Above the applicable Obstacle Limitation Surfaces (OLS) and Procedures for Air Navigation Services - Aircraft Operations (PANS-OPS) surfaces, whichever is lower, of an operational aerodrome;
- d) Within permanent or temporary Prohibited, Restricted and Danger Areas, Temporary Reserved Areas (TRA) and Temporarily Segregated Areas (TSA) published in AIP, including those areas published for short duration through NOTAM;
- e) Within 3 km from perimeter of military installations and facilities;
- f) Within 5 km radius from Vijay Chowk in Delhi;
- g) Within 2 km from perimeter of strategic locations/ vital installations notified by Ministry of Home Affairs (MHA);
- h) Within 3 km from radius of State Secretariat Complex in State Capitals; and
- i) Over eco-sensitive zones around National Parks and Wildlife Sanctuaries notified by Ministry of Environment, Forests and Climate Change (MOEFCC).

13.5 CATEGORIES OF RPA

13.5.1 Civil RPAs are categorized in accordance with Maximum All-Up-Weight, which includes payload, if any. The categorization is as given below:

- a) Nano Less than or equal to 250 grams.
- b) Micro Greater than 250 grams and less than or equal to 2 kg.
- c) Small Greater than 2 kg and less than or equal to 25 kg.
- d) Medium Greater than 25 kg and less than or equal to 150 kg.

- e) Large Greater than 150 kg.

13.6 GENERAL OPERATING PROCEDURES

- 13.6.1 Except for RPA in Nano category intending to fly upto 50 feet (15 m) AGL in uncontrolled airspace or enclosed premises, and RPA owned or operated by NTRO, ARC and Central Intelligence Agencies, all RPA shall obtain Unique Identification Number (UIN) from DGCA.
- 13.6.2 Except for Nano RPA operating below 50 feet (15 m) AGL and Micro RPA operating below 200 feet (60 m) AGL in uncontrolled airspace or enclosed premises, and RPA owned or operated by NTRO, ARC and Central Intelligence Agencies, all RPA shall obtain Unmanned Aircraft Operator Permit (UAOP) from DGCA.
- 13.6.3 Except for Nano RPA operating below 50 ft AGL, all RPA operators shall inform the concerned local police office in writing prior to commencing the operations.
- 13.6.4 Except for Remote Pilots intending to operate Nano or Micro RPAs in uncontrolled airspace, all remote pilots shall have attained 18 years of age, having passed 10th class exam in English and undergone ground and practical training as stipulated under section 9 of the CAR.
- 13.6.5 Owner, Operator and Remote Pilot of Nano and Micro RPAs operating in uncontrolled airspace exempted vide clause 13.6.4 shall be fully aware of responsibilities for all aspects of flight safety during such operations.
- 13.6.6 Except for Nano RPAs intending to operate up to 50 ft (15 m) AGL in uncontrolled airspace or enclosed premises, all RPAs shall be equipped with the following serviceable components/ equipment:
- a) GNSS for horizontal and vertical position fixing
 - b) Autonomous Flight Termination System or Return Home (RH) option
 - c) Flashing anti-collision strobe lights
 - d) RFID and GSM SIM Card
 - e) NPNT compliance for application-based real time tracking
 - f) Fire resistant identification plate inscribed with UIN
 - g) Flight controller with flight data logging capability
- 13.6.7 In addition to the requirement under clause 13.6.6, all RPA intending to operate in controlled airspace shall be equipped with the following equipment/capabilities:

- a) SSR transponder (Mode 'C' or 'S') or ADS-B OUT equipment
 - b) Barometric equipment with capability for remote sub-scale setting
 - c) Geo-fencing capability
 - d) Detect and Avoid capability
- 13.6.8 Remote Pilot shall be equipped with communication facilities to establish two way communication with the concerned ATS unit. For daytime VLOS operations below 400 ft AGL, telephone is considered as a satisfactory means of communication between Remote Pilot and ATC.
- 13.6.9 For operations in the controlled airspace, Remote Pilot shall establish and maintain contact with ATC prior to entering the controlled airspace. All communication between Remote Pilot Station and ATS Unit shall be in prescribed ICAO phraseology. Remote Pilots shall prefix RPA call-sign with the word UNMANNED during voice communications between ATC and the Remote Pilot Station. RPA operator shall ensure that no Radio Frequency interference is caused to air traffic operations or air navigation equipment.
- 13.6.10 Except for flights of Nano and Micro RPAs intending to operate up to 50 ft (15 m) AGL and 200 ft (60 m) AGL respectively in uncontrolled airspace or enclosed premises, RPA operators are required to file flight plan at least 24 hours before estimated time of departure and obtain ATC briefing, Meteorological (MET) briefing and ATC clearance from the nearest ATC Unit, Air Defence Clearance (ADC) from the nearest Indian Air Force Unit and FIC Number from the Flight Information Centre (FIC) concerned.
- 13.6.11 **Submission and Processing of Flight Plans (FPL)**
- 13.6.11.1 RPA operators who are required to submit flight plan shall comply with the provisions contained in ENR 1.10 of AIP-India.
- 13.6.11.2 Flight Plans shall be filed in ICAO model flight plan format. UIN of the RPA shall be used as aircraft identification in Item 7 of the flight plan. Additional information pertaining to RPA flights may be included under Item 18 of the flight plan.
- 13.6.11.3 The following additional information pertaining to RPA flights should be included in the flight plan:
- a) Category of RPAS
 - b) Type of Operation (VLOS / BVLOS / BRLOS)

- c) Name of Operator and UAOP number
- d) Contact number of Remote Pilot
- e) Purpose of Flight
- f) Payload information
- g) Autonomous Flight Termination / Return Home capability
- h) Geo-fencing capability
- i) Detect and Avoid capability

13.6.11.4 In the event of cancellation of flight operation, the applicant should intimate all concerned agencies on Digital Sky platform.

13.6.12 The RPA operator shall prepare and follow Standard Operating Procedure (SOP) for safe operation of RPA, which as a minimum, shall address the following aspects:

- a) Launch and recovery of RPA;
- b) Collision Avoidance with other manned aircraft, unmanned aircraft and obstacles;
- c) Noise abatement;
- d) Mitigation of hazard to persons or property;
- e) Local airspace restrictions;
- f) Right-of-way;
- g) Compliance to NPNT requirements;
- h) Carriage of Payload;
- i) Protection of privacy of persons;
- j) Submission of Flight Plan;
- k) Communication with ATC; and
- l) RPA emergency including loss of C2 link and safe recovery of RPA in case RPA system failure.

13.7 OPERATIONAL APPROVAL THROUGH DIGITAL SKY PLATFORM

13.7.1 Except for flights of Nano RPA intending to operate up to 50 ft (15 m) AGL in uncontrolled airspace or enclosed premises and RPA owned or operated by NTRO, ARC and Central Intelligence Agencies, RPA operators, before undertaking flight, shall obtain permission through Digital Sky Platform.

- 13.7.2 The Digital Sky Platform can be accessed through mobile or web-based applications provided by any authorised Digital Sky Service Providers (DSP).
- 13.7.3 RPA Operators are required to submit flight plan of intended RPA flights through Digital Sky Platform for obtaining operational approval. Digital Sky will indicate whether the proposed flight falls in RED, AMBER or GREEN Zones, thereby providing the required guidance for further approvals, if required.
- 13.7.4 Operation of RPA flights are not allowed in RED zones, unless exempted by appropriate authority as per clause 13.12. Flights in AMBER Zone are permitted to operate subject to eligibility and clearance from appropriate authorities including ATC, Air Defence authorities and/or local administration as per applicable clauses. GREEN Zone indicates unrestricted access to RPA flights.
- 13.7.5 Controlling Authorities of permanent areas mentioned under 13.4.1 should apply to Airports Authority of India (AAI) through the concerned ministry to map the areas as RED Zone in Digital Sky platform.

13.8 PROVISION OF AIR TRAFFIC SERVICES

- 13.8.1 ATS is not mandated to provide separation between manned and unmanned aircraft or between two unmanned aircraft, until such time separation standards are published by ICAO or DGCA. Till such time, unmanned aircraft will be allowed to operate in segregated airspace clear of the flight paths of manned IFR flights.
- 13.8.2 RPAS operating in VLOS will be considered as VFR flights. Such flights will be operating below 400 ft AGL in uncontrolled and controlled airspace and below OLS/PANS-OPS surfaces in the proximity of airports but outside the No Drone Zones (NDZ). Flight crew of manned IFR and VFR flights should be aware of the possibility of RPAS flights below 400 ft AGL and that ATC may not be in a position to provide specific traffic information about each unmanned aircraft operating below 400 ft AGL.
- 13.8.3 RPA Operators intending to operate their RPA equipped with SSR transponder in controlled airspace are required to obtain SSR code from the nearest ATC centre prior to commencement of flight. Remote Pilot shall switch off the transponder when required by ATC in order to avoid generation of alarms on Airborne Collision Avoidance Systems (ACAS) and ATC systems.

13.9 OPERATION OF RPAS IN TEST SITES

13.9.1 Testing and demonstration of RPAS at test sites mentioned in Annexure-XII of the CAR shall be subjected to further conditions mentioned below:

- a) Application for approval for conducting test flights should be submitted to DGCA at least 30 days in advance, along with details of the tests and equipment to be tested.
- b) Application for use of airspace around the test sites should be submitted to Directorate of Airspace Management, Airports Authority of India at least 15 days in advance, along with a copy of approval from DGCA. The application should also contain particulars of the lateral and vertical expanse of the airspace required, duration of testing and the technical specifications of the RPAS being tested.
- c) If operationally feasible, AAI will issue approval for conduct of test flights and may also require concerned ATC units to issue NOTAM pertaining to the RPAS test flight operation. The approval may also require operator to coordinate with controlling authorities of nearby danger and restricted areas, TSA/TRAs and local police authorities before undertaking the test flight.

13.9.2 Operation of RPAS in unused airstrips or Government educational institutions campus, as mentioned in clause 14.3 of the CAR shall also require approval process detailed above in clause 13.9.1.

13.10 SAFETY RISK ASSESSMENT BY RPA OPERATOR

13.10.1 RPA Operator shall carry out safety risk assessment of the operational procedures and launch and recovery sites.

13.10.2 The safety risk assessment process should follow the following steps:

- a) Hazard identification;
- b) Determination of severity and likelihood of hazard on the operation;
- c) Mitigation measures to reduce the risk identified; and
- d) Verification of mitigation actions.

13.11 REPORTING OF INCIDENTS AND ACCIDENTS INVOLVING RPAS

13.11.1 Operator of RPA except Nano RPA shall be responsible for notifying any incident or accident involving RPA to the Director of Air Safety, DGCA, in the format specified in Annexure VIII of the CAR.

13.11.2 Any incident or accident involving known or controlled RPA shall be reported by the concerned ATC Unit to DGCA and AAI authorities as per applicable instructions on reporting of incidents and accidents. The report shall include information contained in Annexure VIII of the CAR.

13.12 EXEMPTIONS

13.12.1 RPA operators may approach DGCA for grant of exemption to operate beyond the provisions contained in the CAR.
