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REGULATING THE UNMANNED

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The Draft Circular

On April 21, 2016 Directorate General Civil Aviation (DGCA), a regulatory body governing safety aspects of civil aviation in India, issued a draft circular containing guidelines for operating a civil Unmanned Aircraft System (UAS) in Indian airspace. It also specified the procedure for obtaining a Unique Identification Number (UIN) for such a system.¹ This UIN is expected to be inscribed on a fireproof identification plate along with RFID (Radio Frequency Identification) tag or a SIM and mounted on the Unmanned Aircraft (UA). The comments on the circular have been invited by May 21, 2016; thereafter it would become a civil aviation requirement (CAR) or an aviation regulation.² Under this regulation DGCA would henceforth register all civil UA and issue a Unmanned Aircraft Operator Permit (UAOP) on case to case basis. Obtaining this permit will also involve obtaining requisite clearances for all frequencies to be used from department of Telecommunications (DoT). This is a welcome step by DGCA to regulate the expected proliferation of UA with associated safety

implications for manned traffic and coupled with security implications, especially with an increase in payload capacities of such systems owing to technological advancements.

UAOP Applicability

The aim of DGCA is to regulate UA operations at or above 200 ft AGL in uncontrolled airspace and restrict their operation in controlled airspace. The operation of model aircraft below 200 ft AGL for recreational and indoor purposes has been kept out of the purview of obtaining UAOP, however permission from local administration (Additional Deputy Commissioner-ADC) would still be required in case operating the UA below 200 ft for any other purpose. This would also ensure policy implementation by mandatorily involving local administration in cases as diverse as commercial photography and critical infrastructure monitoring.

The Unmanned Aerial System (UAS)

For some time now, these systems which have multiple components namely the UA, a



Remote Pilot Station (RPS), a Command and Control (C2) link, a maintenance system along with operating personnel have been used mainly for military purposes. The armed forces have been using these systems in the Visual Line of Sight (VLOS) as well as in the Beyond Visual Line of Sight (BVLOS) modes. These systems have been classified based upon their All up Weight (AUW) as Micro (Less than two Kg), Mini (More than two and less than 20 Kg), Small (Greater than 20 but less than 150Kg) and Large (Greater than 150 Kg). With rapid technological advancements in this field, it is only a matter of time before these systems are extensively deployed for civilian purposes and are likely to have a significant impact on current aviation regulatory framework.

Recognising this requirement, the International Civil Aviation Organisation (ICAO) in 2015 has issued a manual on Remotely Piloted Aircraft Systems (RPAS) designated Doc 10019 AN/507, which recognises these systems as a new component of the international aviation system and aims to provide an internationally acceptable regulatory framework for their safe operations alongside manned flights. However, even though Rules of the Air (ICAO Annex 2) have been amended to include these UAS, the rules defining Standard and Recommended Practices (SARPs) as a part of Annex 6 (Operations) and Annex 8 (Airworthiness) are yet to be framed along with supporting Procedures for Air Navigation Services (PANS).

Added to these are the issues concerning C2 frequencies and their possible conflict with unmanned systems being operated by Armed forces along with matters concerning issuance of remote pilot licenses, type ratings and certification.

UA Operation: Governing Requirements

It has been clarified that conduct of UA operations would be governed by the same rules that govern the flights of manned aircraft with onus on the operator to carry out safety assessment of launch and recovery sites. The requirements for filing a flight plan and obtaining Air Defense Clearance (ADC) have to be complied with, along with avoiding Temporary Segregated Areas (TSAs) and Temporary Reserved Areas (TRAs) as specified from time to time.³ However, monitoring of this type of traffic would require a significant upgrade of monitoring systems owing to the reduced Radar Cross-section (RCS) of such systems. These would be partially met by mandatory requirements pertaining to onboard components /equipment such as an identification plate, a Global Positioning system/ Inertial Navigation System (GPS/INS) with a tracking and geo-fencing capability along with a 'detect and avoid' collision avoidance capability and a return home functionality in case of a communication failure. These requirements would be in addition to an on-board SIM card slot for app based tracking for Micro and Mini UA and a Secondary Surveillance Radar (SSR)

Transponder (Mode 'C' or 'S') or Automatic Dependent Surveillance- Broadcast (ADS-B) option for small and large UA.

The Way Ahead

The changing landscape of aviation which is steadily moving towards unmanned automated systems is to be recognised and needs to be suitably regulated. A start has been made with issuance of these guidelines as an initial set of rules and conditions for operation for the UAS.

However all the concerned stakeholders including the Armed forces, private entrepreneurs intending to manufacture these systems indigenously along with the government agencies need to get involved from this initial stage itself and help in evolving a comprehensive set of rules and support infrastructure. In this respect use of extensive experience set and expertise already available with Indian Air Force (IAF) would be of an immense help in addressing both safety and security concerns.

In addition, it would also be prudent to issue the requisite clearances under a single window system and introduce a separate category to ease processing cases pertaining to developing and testing of indigenously manufactured UAS.

(Disclaimer: The views and opinions expressed in this article are those of the author and do not necessarily reflect the position of the Centre for Air Power Studies [CAPS])

Notes

¹ DGCA, "Draft Air Transport Circular XX/2016", www.dgca.nic.in, accessed April 25, 2016

² "Sky Safety : DGCA Brings Drones under Safety Radar", *Hindustan Times*, New Delhi, April 23, 2016 p.08

³ "AIP Supplement 03/2016", Airport Authority of India, http://www.aai.aero/misc/AIPS_2016_03.pdf accessed April 27, 2016