

COMMENTS ON DRAFT CIVIL AVIATION REQUIREMENTS FOR UAS BY DGCA RELEASED IN NOV 2017

INTRODUCTION

1. Unmanned Aircraft Systems(UAS) are a new component of the aviation system, one which many different organisations across the world are trying to understand, define and ultimately integrate. These systems are based on cutting-edge developments in aerospace technologies, offering advancements which may open new and improved civil/commercial/military applications as well as improvements to the safety and efficiency of all civil aviation. The safe integration of RPAS(Remotely Piloted Aircraft-a subset of UAS) into non-segregated airspace is a long-term activity with many stakeholders.

2. Civilian use of UAS includes but not limited to agriculture, damage assessment of property and life in areas affected with natural calamities, surveys (infrastructure monitoring including power line 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.

3. UAS 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 regulations for operations of this activity. Various countries across the world are coming up with their own regulations in respect of Operations of RPAs in Civil Airspace.

4. In Nov 2017 DGCA released a draft Civil Aviation Requirements(CAR) for Operation of Remotely Piloted Aircraft in Indian Airspace(**Annexure A**). This CAR lays down requirements for obtaining Unique Identification Number(UIN), Unmanned Aircraft Operator Permit (UAOP) and other operational requirements for civil Remotely Piloted Aircraft System (RPAS) to operate in Indian

Airspace. Comments were requested by DGCA on this CAR by 01 Dec 17.

5. The CAR was studied by the undersigned in detail and a lot of anomalies were noticed in it. But before going through these it will be prudent to study the existing regulations in other parts of the world. These have been discussed in succeeding paragraphs.

A STUDY OF EXISTING UAS REGULATIONS IN OTHER PARTS OF THE WORLD

6. India is a developing nation and we are far behind many other developed nations in terms of aviation technology. India has far less air traffic as compared to USA and most other European countries. Civil UAS Operations were becoming matter of concern in these countries as well before it rang bells of Indian Aviation Authorities.

7. These countries in western part of the world developed the regulations over a period of many years with input from many groups of experts from RPA inspectors, operators and manufacturers, pilot representatives, air navigation service providers, air traffic control representatives, accident investigation bureaus, human performance specialists, surveillance and communications experts and others. Also their regulations state that they will be subject to regular revision process that will be based on developments in the field. So in a nutshell these countries have formed their regulations after a lot of study, research and deliberations, keeping safety in mind. So it will be prudent to learn from these before formulating our own RPA regulations. The regulations being followed in the United States are discussed in succeeding paragraphs.

8. In United States there are no restrictions on flying Small UAS(<25 kg), if it is flown for recreational purposes only. Small UAS for hobby and purely recreational purpose are called model aircraft. The recreational use of Small UAS is the operation of an unmanned aircraft for personal interests and enjoyment. For example, using a SUAS to take photographs for your own personal use would be considered recreational; using the same device to take photographs

or videos for compensation or sale to another individual would be considered a commercial operation. Using SUAS for Aeromodelling Sport will be considered a recreational use. These SUAS could either be a fixed Wing, Rotary wing, Multicopter or a Hybrid Vehicle. There is no registration or licence required to fly these in USA and they must follow the rules given below:-

- a) The model aircraft is limited to not more than 55 pounds(25 Kg) unless otherwise certified through a design, construction, inspection, flight test, and operational safety program administered by a community-based organization. Such organisation in USA is AMA(Academy Of Model Aeronautics). Equivalent organisation in India is AMAI(Aero Modellers Association). AMAI is a registered NGO. Retd. Indian Chief of Air Staff, Air Chief Marshal A.Y.Tipnis has agreed to be its guide and mentor as CHIEF PATRON.
 - b) It must be flown within visual line of sight(VLOS) and Fly no higher than 400 feet above ground level and remain below any surrounding obstacles when possible.
 - c) Not fly near or over sensitive infrastructure or property such as power stations, water treatment facilities, correctional facilities, heavily travelled roadways, government facilities, etc.
 - d) If when flown within 5 miles of an airport, the operator of the aircraft provides the airport operator and the airport air traffic control tower (when an air traffic facility is located at the airport) with prior notice of the operation (model aircraft operators flying from a permanent location within 5 miles of an airport should establish a mutually-agreed upon operating procedure with the airport operator and the airport air traffic control tower (when an air traffic facility is located at the airport). In this case operations are permitted only upon prior approval by the ATC.
 - e) The aircraft is operated in a manner that does not interfere with and gives way to any manned aircraft.
9. In United States if the UAS is meant to be used for commercial purpose, the UAS pilot must follow the FAA's set of operational rules (known as "Part 107"). These rules went into effect on August 29, 2016. Commercial use could include:-

- a) Selling photos or videos taken from a UAS. For example Professional real estate or wedding photography. Professional cinema photography for a film or television production or using UAS for commercial Aerial mapping or land surveys.
 - b) Using UAS to provide contract services, such as industrial equipment or factory inspection, security or communications.
10. There are a different set of requirements for UAS that are flown commercially. These are:-
- a) The UAS must be under 55 Pounds of weight(25 kg).
 - b) Operation in Class B, C, D and E airspace are allowed with the required ATC permission. Operation in class F,G Airspace is allowed without the required ATC permission.
 - c) Must fly under 400 feet above ground level (AGL) or, if flying at an altitude higher than 400 feet AGL, stay within 400 feet of a structure.
 - d) Must keep the UAS in sight (i.e. visual line of sight), either by the remote pilot in command or a visual observer.
 - e) Must fly during daylight hours* or civil twilight hours (30 minutes before official sunrise to 30 minutes after official sunset, local time) with appropriate anti-collision lighting(in case of civil twilight flying).
 - f) Must yield right of way to manned aircraft.
 - g) Must not fly over people and must not fly from a moving platform unless in a sparsely populated area.
 - h) No person should act as a remote pilot in command for more than one UAS at a time.
 - j) The UAS must be registered in the FAA(Federal Aviation Agency) website online. The Fee for registering is 5\$.

Upon registering a registration number is given which must be displayed on the UAS all the time.

k) If operation outside the above Envelope is required then most of the restrictions discussed above are waivable upon obtaining a written/online waiver from FAA. The waiver request should mention how the operation can be safely conducted by the Operator. For example if the operator wants to fly in night, Beyond Visual Line Of Sight or above 400 feet then he must apply for a waiver stating how is he going to do this safely. Various such waivers granted by FAA are displayed on the FAA website.

11. There are a set of requirements to be met by the remote pilot in case he wishes to fly commercially. These are:-

- a) The remote pilot must be of at least 16 Years of age.
- b) The UAS Pilot must hold a Remote Pilot Airman Certificate or be under the direct supervision of someone holding a remote pilot airman certificate.
- c) To obtain a Remote Airman Certificate the pilot must complete a free online course given in FAA website.
- d) Be vetted by the Transportation Security Agency. This is like security check of the pilot.
- e) Pass a aeronautical knowledge test for remote pilots. At present this test is outsourced in USA to two companies and is conducted at across 700 places in USA. The fee for the exam is 150\$. After passing this exam apply online to FAA to obtain the Remote Pilot Airman Certificate. This gives clearance to the remote pilot to fly for commercial purposes under the conditions given in para 10.

12. These are the current regulations that are in Vogue in United States as on date. USA formed these regulations after much deliberations and study. So it will be prudent to follow these regulations in the absence of a similar research/study in India. These would provide

a safe way for the commercial operators of UAS to conduct their operations without endangering the safety of national airspace.

13. The requirements to obtain UIN and UAOP, as mentioned in the DGCA CAR for UAS is too restrictive, and some of the technologies mentioned in it have been not achieved yet for RPA internationally. Hence it will not be possible to obtain a permit under the terms and conditions mentioned for a Civil UAS operator.

14. India has a big market for UAS both in military and the civil Domain. There are a lot of start-ups, who are venturing into development and manufacturing of UAS apart from Defence Research and Development Agencies like DRDO, ADA and ADE. But the government laboratories are not able to meet the requirements of the of various agencies as of now, due various constraints. Hence the government agencies are continuing to import UAS systems at very high cost from the western countries . This leads to loss of revenue and jobs in terms of billions of dollars to our nation. MSMEs contribute 45 percent of the industrial output and 40 percent of the total exports of India. They can play a significant role in the growth of the aerospace sector, including UAS development. Development of advanced aviation technologies, including UAVs is an unknown area, venturing into which requires a high level of research, funding and government support. The ingeniously designed UAVs are facing bureaucratic difficulties and may not become successful unless a enabling environment is provided to them. The private players have the capability to meet the domestic needs to a big extent. This will generate a lot of jobs in the UAS design and manufacturing segment in the future, and prevent outflow of foreign exchange. The present restrictive DGCA Draft CAR if finalised could mean end of Make In India in the UAS field for the private players.

15. The shortcomings in the Draft CAR that needs to be addressed are discussed in succeeding paragraphs.

ISSUES IN CAR THAT NEEDS TO BE ADDRESSED AND AMMENDED

16. Section 6.3 of the CAR requires all RPAs with flying weight of more than 2 kg(Mini Category) and above and those which fly above 200 ft AGL irrespective of weight to have **RF ID tag**. A RFID tag is used to identify a tagged item within in a limited distance. The range is usually

within a few metres. So practically a RPA cannot be tracked using a RFID Tag. No other country in the world as of now has such requirement listed in the RPA rules. Section 12.6 of the CAR clears operation of RPA in Visual Line Of Sight(VLOS) only. Hence having a RFID tag will not be of any consequence, since the RPA is flying within a limited distance from the pilot. So this requirement must be deleted.

17. Section 9.1 of the CAR states the Remote Pilot should have attained a age of 18 Years. Unless the RPA is being flown for commercial purposes the age limit does not make sense. India, with over 380 universities, 11,200 colleges and 1,500 research institutions , has the second largest pool of scientists and engineers in the world. These engineers do very well when they study abroad, where they get practical training in colleges as well as by working with leading aerospace aviation giants. It is many of these college students who invent new technology as part of their study and research, which is often adopted by aviation giants abroad. There is a need to provide the same environment to the students of IITs and engineering colleges in India. Students from many Engineering Colleges/Schools these days participate in designing and building RPA as part of competitions, conducted nationally and internationally and this age limit will restrict them. There should be no age limit unless the RPA is flown for commercial purpose. Age limit of 16 Years should be imposed for commercial operation of RPA as is the standard in USA as per Part 107 of FAA rules.

18. Section 9.1 of the CAR also mentions the RPA pilot to undergo ground training and have FRTOL. The ground training for a full size aircraft and RPA will vary, though they will definitely have some common areas. FRTOL is required by commercial pilots of manned aircraft. It needs in depth study of RT phraseology and passing a exam. Such exhaustive knowledge is not required for a RPA pilot. Also when flown within VLOS, communication with ATC is not necessary. Such knowledge will be required by RPA pilots when flown in non Segregated Airspace where manned aircraft would fly as well. In future when RPA get all the technology to operate together with manned aircraft, in common airspace then the rules maybe revised. Even United States and other western countries do not have such requirement. Since the present scope of the RPA operation will either be within VLOS or in Segregated Airspace(through Flight Plan to ATC) so this requirement should be deleted. As and when other western countries incorporate RT

rules for RPA pilots, DGCA RPA regulations should be suitably amended as per Indian context. As of now we can have a similar Remote Pilot Airman Exam for Commercial RPA pilots as conducted by FAA in USA. We can follow the study material as prescribed by the FAA in their website for this. The details of this are mentioned in paragraph 11 of this article. DGCA should device a similar exam in India. So section 9.1 should be amended to read- **All commercial RPA Operator need to pass a Remote Pilot Airman Exam to Obtain a UAOP certificate. The syllabus and model question papers for the Exam are being worked out and will be available made available in DGCA website once finalised.**

19. Section 11.1(e) of the CAR requires all RPA except nano category to have GSM SIM Card Slot for APP based tracking. Micro category RPA(<2 Kg) are too small to have have this additional equipment and it will add additional weight penalty to the RPA. Also if the RPA is being flown VLOS and the pilot is keeping it in view all the time and is aware about its position, a GSM SIM based tracking should be done away for VLOS flying of RPA. When the RPA is flown BVLOS then the RPA's IN/GPS navigation units transmit back the position of RPA to the Operator. Hence a additional GPS GSM Sim card APP based tracking is not necessary. However if still considered necessary it should be made mandatory in Small(>25 Kg) and above weight Category RPA when flown Beyond Visual Line Of Sight(BVLOS). **So 11.1(e) should be amended to read GPS GSM Sim based tracking equipment necessary in Small(>25 Kg) and above weight category RPA when flown BVLOS.**

20. Section 11.2 (a) of the CAR states that RPA intending to Operate above 200 ft AGL to carry SSR Transponder(Mode 'C' or 'S') or ADSB OUT equipment. None of the RPA operated by Indian Defence Force which costs upwards of hundreds of crores as of now have SSR or ADSB Out facility. Only the RPA operated by National Technical Research Organisation(NTRO) have SSR facility as of now. SSR equipment is very heavy, expensive and requires a lot of power for its operation. It is not even mandatory for full size Aircraft in India to have SSR as of now. Also as of now there are no equipment available, that is compact and light enough to be placed in Nano, Micro, Mini RPA. ADSB is a emerging technology. It is not mandatory for full size aircraft in Indian Airspace to have ADSB facility as of now. ADSB is not even mandatory in US Airspace for full size Aircraft as of now. Neither it is

mandatory for RPA in US Airspace as per Part 107 of FAA rules. There are no approved ADSB equipment available to be installed in RPA as of now, though some prototype equipment is being tried out in this field. SSR and ADSB inform the ATC and other Aircraft about the position of a aircraft. If a RPA is flown within VLOS the Pilot will inform the ATC about the place of conduct of RPA operation and hence it is not a unnecessary equipment. SSR and ADSB Out should be made mandatory in case of BVLOS RPA flying in controlled airspace for Small and Large RPA once such certified equipment is made available for RPA. In the interim, BVLOS flights of RPA should operate under exclusive Flight Plan and Clearance Of Concerned ATS provider in the region. For this the RPA Operator shall file a Flight Plan which shall mention the details of Area Of Operation and Time Of Operation. The ATC shall give clearance for Operation of RPA in the Specific Time Slot and Height Band. ATC should not allow simultaneous operation of manned aircraft and RPA in the same dimensions(same area and height banned) of Airspace at a given time. For example if manned aircraft are operating in a specific area above 1500 feet where RPA operator wants to operate then RPA operations should be cleared below 1000 feet only. **Hence it is suggested that Section 11.2(a) should be amended to read – SSR(Mode C or S) or ADSB Out equipment mandatory when RPA is flown beyond visual line of sight and above 400 feet for Small and Large RPA as and when the Credible SSR/ADSB Technology becomes available for use in RPA. In the interim BVLOS flights above 400 feet should operate under exclusive Flight Plan and Clearance Of Concerned ATS Provider in the region. ATC shall not allow simultaneous operation of manned aircraft and RPA in the same dimensions of Airspace at a given time unless it has been mutually agreed to between the pilot of manned aircraft and RPA pilot(If mixed operation is required for certain R&D or operational reasons).**

21. Section 11.2(b) of the CAR makes it mandatory for RPA operating above 200 feet to have barometric equipment with remote subscale setting capability. This kind of equipment is used in full size aircraft and is very expensive. There are no such equipment available as of now for RPA use. The RPA these days utilise hybrid altitude consisting of barometric and GPS altitude, is very accurate compared to old barometric altimeters. Hence it is not necessary to have barometric equipment with remote subscale setting on board a RPA. Even Part 107 of FAA rules in USA have not mentioned the need for such a equipment.

Hence it is suggested that requirement 11.2(b) of the CAR should be amended to read- **Barometric and GPS altitude equipment.**

22. Section 11.2(d) of the CAR requires the RPA flying above 200 ft AGL to have “**Detect and Avoid Capability**”. “Detect and Avoid” is a capability that is still being researched and there is no such equipment that is available as of now for use in RPA. NASA and some other agencies world over are conducting some experiments in this field. Till such time this Technology becomes available it cannot be made mandatory for RPA in Indian Airspace. Moreover in VLOS flight of RPA, the pilot is visually monitoring the RPA and avoiding conflict with other full size aircraft or other RPA. So this requirement should be deleted. For BVLOS flight RPA, Operator shall operate under exclusive Flight Plan and clearance by ATC specifying time, height band and area of operation. So instead the section **11.2(d) should read- As detect and avoid capability is not available for RPA as of now, BVLOS flights above 400 feet shall be operated under exclusive Flight Plan and Clearance by ATC specifying the Time, Height band and Area of Operation. Mixed operation by manned aircraft and RPA in the same airspace is not permitted. There may be cases where mixed operation is desired by the RPA pilot and manned aircraft pilot(for e.g for some R&D purpose or Military Mission). In this case the RPA and manned aircraft pilot must maintain positive radio contact with each with prior information to ATC. In this case it becomes the responsibility of the RPA pilot and pilot of manned aircraft to avoid conflict with each other.**

23. Section 11.3 of the CAR says Remote Pilot shall be equipped with communication facilities to establish and maintain continuous two-way communication with concerned ATS unit. **Section 11.3 of the CAR should be amended to read -Most VLOS operations will be operated either below the altitude where ATC communications is required or in situations where ATC prior approval and operating constraints have been agreed(via a Flight Plan), routine ATC communications will be unnecessary. However, ATC may still require a method to contact the remote pilot in an emergency, and the remote pilot should know how to contact the local ATC unit if the need arises. In both cases this would normally be achieved by telephone. In exceptional circumstances for particular operations(e.g. low level surveillance of an active airfield), direct communication between the ATC unit and the**

remote pilot may be required. In these cases, communication can be established by using a portable RT set. For VLOS operation of RPA no such requirement is necessary as the RPA pilot will visually avoid any conflict with other manned aircraft or RPA. For BVLOS operation, since the RPA pilot and ATIS provider antenna will be located on ground, the ground to ground communication with RT sets will not be possible if the RPA pilot is more than a few kilometres away from the ATC. Hence BVLOS will be under exclusive clearance by ATC via a Flight Plan in Segregated Airspace.

24. Section 11.4 of the CAR requires the GPS tracking system to be tamper/spoofing proof in order to work in case of a RPA accident. While this is desirable but no equipment is ultimately crash proof. Even the full size aircraft do not have such fail safe equipment. Had there been such equipment then the missing Malaysian Airline(MH 370) would have been located by now. So this requirement should be deleted.

25. Section 12.2 of the CAR requires Flight Plan to be filed except for Nano RPA below 50 feet and Micro RPA below 200 feet. Part 107 of FAA rules in USA clear operation without Flight Plan till 400 feet for Upto Mini RPA for VLOS Operation. It is imperative that we follow similar rule which has been arrived to after much research. **So section 12.2 of the CAR should be amended to read- Flight Plan, ADC and information to nearest ATC unit is necessary when any RPA is flown above 400 feet or BVLOS. For upto Mini category RPA when flown within VLOS and less than 400 feet AGL, filing Flight, ADC and information to nearest ATC unit not mandatory. For RPA above Mini category these three requirements are mandatory in all cases.** Section 12.3 of CAR should be deleted as the issue will be addressed in 12.2.

26. Section 12.6 States that operation will be in daylight only and within VLOS. However certain operations requirements may be beyond this limitation. Such requirements should be met by obtaining a written waiver from DGCA. This is the procedure which has been laid out in Part 107 of FAA rules, in USA, for obtaining waiver, for Operations beyond the scope of the part 107 rules. **So section 12.6 of CAR should be amended to read -In case the Operator requires to fly beyond daylight, or BVLOS or beyond the restrictions of DGCA CAR, he may do so by obtaining a DGCA waiver. In the waiver application**

the Operator should specify how he intends to conduct his operations safely. Based on the justification DGCA will grant a waiver. After obtaining such waiver, the Flight Plan in should clearly mention such operation beyond the CAR rules. Such operations will be conducted in segregated airspace till such time credible technology becomes available to conduct such operations in non segregated operations.

27. Section 12.21(a) of the CAR says no RPA shall be flown within 5 km from Aerodrome Reference Point of a Operational Airport. There may be requirement to fly near a Airport in exceptional circumstances. Such operations can be cleared under the explicit clearance of the ATC. So **section 12.21 should be amended to read- No RPA should be flown with 5 Km of Aerodrome Reference Point of a Operational Airport. Any deviation from this will permitted only after obtaining clearance from the Airport ATC.**

28. Section 12.21(c) states no RPA should be flown within permanent or temporary Prohibited, Restricted and Danger Areas. There maybe requirement to operate under exceptional circumstances within these areas after obtaining clearance from the regulators of these areas. So **section 12.21(c) should be amended to read- no RPA will operate within temporary, Restricted and Danger Areas including TRA and TSA as notified by AAI in AIP. Deviations from this permitted only on obtaining clearance from the regulators of these areas.**

29. Section 12.21(f) states that no RPA shall be flown beyond 500 m(horizontal) into sea from coast provided location of ground station is on fixed platform over land. It may be required for certain R&D purposes or due the nature of the operation to fly beyond this. Such deviations can be allowed provided area of operation is specified in Flight Plan and the the Flight Plan is approved. So **section 12.2(f) should be amended to read no RPA shall be flown beyond 500m(horizontal) into sea from coast provided location of ground station is on fixed platform over land. Any deviations to this will be subject to approved Flight Plan.**

30. Section 12.21(i) states no RPA shall be flown within 500 m from the perimeter of military installations/facilities. This can be allowed subject to approval by the military installation/facility. So **section**

12.21(i) should be amended to read no RPA shall be flown within 500m from the perimeter of military installation/facilities unless clearance is obtained from the military installation/facility.

31. Section 12.24 should be amended to read -to encourage new technology, Indian organisations involved in R&D related activity of RPAS, having obtained industrial licence from DIPP, shall use the test sites indicated in Annexure-VIII for testing/demonstration purpose. If any other area is to be used, permission should be obtained for the same from concerned ATC unit.

32. Section 14.1 requires all civil RPA operators shall have insurance with the liability that they might incur for any damage to third party resulting from accident/incident. RPA is a emerging technology and as of now there are no such insurance policies available. If the Indian Civil UAS market grows, Insurance companies may start providing the same. Hence **section 14.1 should be amended to-all civil RPA operators shall have insurance with the liability that they might incur for any damage to third party resulting from accident/incident. In case such insurance is not available then a Non Availability Certificate should be obtained from a leading General Insurance provider.**

CONCLUSION

33. UAS is a emerging technology which has capability to change the future of Aviation. It is often said by critics that United States has already produced the last manned fighter aircraft, and the future belongs to UAS. With time we will see the rise of UAS and ultimately there may come a time, where most of the air operations are performed by unmanned aircraft including commercial and cargo.

34. Indian armed forces reportedly came out with a blueprint in early 2016 for the procurement of over 5,000 UAVs in the next 10 years, which is likely to cost US \$3 billion. India's government R&D organisations have been trying to develop UAVs for its armed forces amid various limitations and challenges. However they have not been to develop many successful UAVs for the defence and civil industry. This field is mostly dominated by private players in western countries. There is an increasing perception that private sector, which thrives on

its efficiency in production and applied research, would be able to transform India's aviation sector. The present draft CAR, severe restrictions have imposed on private operators and the government operators have been exempted from most requirements. Placing unnecessary and over demanding restrictions on private players in this field will mean an end of private players in this field. The reduced domestic availability may mean that, the armed forces continue importing to meet their requirements, thereby causing loss of revenue to the country.

35. The Indigenous development of manned and unmanned aircraft faces enormous technological, regulatory and other challenges in India, which impede indigenisation. The persistent challenge for India has been to transform from being a net importer to an indigenous developer and exporter of various aviation products, including UAVs.

36. The imposition of a ban on operations of civil UAS by the DGCA in October 2014 has stagnated the growth of the civil UAV industry. Most of the Civil UAV companies in India are start-ups which have been badly hit by the ban and are unable to conduct R&D, testing and trials of UAVs. The delay in releasing the guidelines has adversely impacted the eco-system in terms of funding the start-ups for UAV development. The start-ups, which had developed UAVs indigenously prior to the ban, were unable to commercialise them and move to the next level. This is demotivating the private investors to invest in this domain. The requirements to Operate UAS and UAOP in the present CAR are next to impossible to achieve as of now. Such technologies listed are not available yet for RPA. The government agencies have been exempted from all the requirements. The present Draft CAR if finalised will make civil UAV operations impossible in India and have an adverse impact on the private sector's participation in R&D as well as on the growth of the Civil UAV industry. This could mean an end of Make In India in this field for the private players.

37. It is suggested that in the absence of a credible study in the integration of UAS in Civil Airspace we derive our own regulations based on the western countries. Though it is important to prevent the misuse of this technology, unnecessary restrictions will hinder India's indigenous growth in this field. Various enabling technologies are being developed for RPA so as to integrate them safely into the Civil Airspace. In the interim it will be prudent to open up the airspace for

RPA in a gradual manner over time, with relaxations of restrictions in tranches as technology progresses and matures

38. It is recommended that there be no restrictions upto Mini RPA when flown within VLOS and less than 400 feet for recreational purpose(Model Aircraft). Commercial operations within VLOS and less than 400 feet AGL upto mini category RPA to be cleared on obtaining UAOP and UIN. For above mini category RPA, beyond VLOS operations and operation beyond the laid rules, the operator to obtain a waiver from DGCA. Section 8,9,10 and 11 of this document to be referred for the detailed descriptions of these. Also there should be no restrictions on import of Model aircraft used for recreational purpose.

39. It is requested that these recommendations be considered before finalising the UAS rules else the indigenous UAS market can be seriously hit and we way remain a net importer.