

বিষয়ঃ Drone/UAS এর বিধি-বিধান পরিচালনা নিশ্চিতকরণ সংক্রান্ত খসড়া ANO-এর উপর  
মতামত প্রদান সংক্রান্ত।

সূত্রঃ “ড্রোন নিবন্ধন ও উড্ডয়ন নীতিমালা-২০২০”।

Drone/UAS এর বিধি-বিধান পরিচালনা নিশ্চিতকরণের জন্য বেবিচক কর্তৃক প্রস্তুতকৃত খসড়া ANO-এর উপর জনসাধারণের সুচিন্তিত মতামত আগামী ১৯/১২/২০২১খ্রিঃ তারিখের মধ্যে নিম্নলিখিত ই-মেইল এ প্রেরণ করার জন্য অনুরোধ করা হলো।

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**AIR NAVIGATION ORDER (ANO)  
ON  
CAAB PART 947 and PART 945  
(Drone/Unmanned Aerial System)**

**Issue 1.0  
15<sup>th</sup> of November 2021**

**DRAFT**



	<b>Air Navigation Order (ANO) (DRAFT)</b>	CAAB Part 947
	<b>FOREWORD</b>	& Part 945


UAS (Unmanned Aerial System)/drones are one of the most dynamic and multi-purpose innovations of the 21<sup>st</sup> century which can be used in several economic sectors worldwide. UAS/drones are basically unmanned aerial vehicles that are remotely controlled. They range in various sizes and masses from few hundred grams to several thousand kilograms. Over the past few years, drone or UAS (Unmanned Aerial System) has become essential to the functions of various governmental and business organizations and have managed to penetrate through areas where certain industries were either stagnant or lagging. From quick deliveries at rush hour to scanning an unreachable remote area, drone features are proving to be extremely beneficial in places where man cannot reach or is unable to perform in a timely and efficient manner. The increased use of drones in multiple domains has presented many countries with regulatory challenges. Such challenges include the need to ensure that drones are operated safely, without harming national or public security and privacy, and in a way that would protect areas of national, historical, or natural importance.

Efforts to harmonize rules of drone operations are currently being undertaken by the many countries including ICAO, EASA and FAA, which has introduced a proposal to integrate all drones, regardless of their size, into the civil aviation safety framework. To standardize the UAS industry, different countries adopted regulations to oversee the UAS activities. Presently, ICAO, FAA & EASA are trying hard to simplify the current barriers between the stakeholders and regulators. Though the regulatory framework of drone is continuously evolving around the globe, following the recent guidelines of ICAO, Government of Bangladesh has also adopted a policy named “Drone Registration and Flying Regulation, 2020” to incorporate drones into civil aviation regulatory frameworks. The drone policy broadly describes the regulations related to drone registration, licensing, flight authorisation process, enforcement issues and authorises CAAB to promulgate detailed drone regulations and guidelines through ANO (Air Navigation Order) to elucidate the drone policy and describe the related aspects of drone regulations for the regulator and stakeholders so that drone operations in Bangladesh remain safe, harmonized and continuous as of manned aircraft operations.

The ANO is developed from current applicable international regulations and segregates the operations based on risk-factors. Commercial and recreational operations are placed in a low-risk category (open category) and a medium risk category (specific category) and the high-risk operations like carrying of goods and passengers are kept in the certified category,

In general, the open category operation places very few demands on the pilot or operator and implies a buy-and-fly approach. A person can operate certain types of drone for recreational purposes without prior permission in a hassle-free designated airspace defined by CAAB. All other operations, unless high risk, can be performed in the specific category following prescribed procedures. To ease the burden for operators and aviation authorities, a number of standard scenarios are created that cover most of all operations. The risk mitigation measures are adequately spelled out and the operator must declare or demonstrate that it is compliant to do the intended operation. Drone registration and remote pilot licensing criteria and procedures are also described in this ANO. To be eligible for a remote pilot license/Remote operator Certificate (ROC), an operator must obtain certain qualifications, complete certain training, and have a minimum number of hours of experience flying UAS. Detailed guidelines are prescribed in the ANO for entities wishing to obtain an operator’s certificate to operate large UAS or smaller UAS for non-recreational purposes.


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As there is no economically viable drone tracking technology around the globe, CAAB is likely to face challenges for a safe integration of drones with the existing aviation regulatory framework. However, to keep the traditional air traffic management smooth, drone operations are mainly kept reserved for low-flying airspace. Enforcement policy is introduced for any kind of violation against current drone regulations.

**Air Vice Marshal M Mafidur Rahman**  
Chairman  
Civil Aviation Authority of Bangladesh

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	<b>Air Navigation Order (ANO)</b>	CAAB Part 947 & Part 945
	<b>LIST OF ABBREVIATION</b>	

## INCORPORATED AMENDMENTS

### Air Navigation Order (ANO)

Regulation amendment	Applicability date
Initial issue	31/10/ 2021

### AMC & GM TO IRS

AMC/GM Amendment	Applicability date

The content of this document is arranged as follows: the cover regulation (recitals and articles) with the implementing rule (IR) points appear first, followed by the related acceptable means of compliance (AMC) and guidance material (GM) paragraph(s). All elements (i.e. cover regulation, IRs, DRs, AMC, and GM) are colour-coded and can be identified according to the illustration below.


<i>Cover regulation</i>
<b>CAA rule</b>
<b>Acceptable means of compliance</b>
<b>Guidance material</b>

This document will be updated regularly to incorporate further amendments. The format of this document has been adjusted to make it user-friendly. Any comments shall be sent to [drone@caab.gov.bd](mailto:drone@caab.gov.bd)

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**LIST OF ABBREVIATIONS**

ANSP	air navigation service provider
ARC	air risk class
AGL	above ground level
AMC	acceptable means of compliance
ATC	air traffic control
BVLOS	beyond visual line of sight
C2	command and control
C3	command, control and communication
CAAB	Civil Aviation Authority of Bangladesh
ConOps	concept of operations
DAA	detect and avoid
ERP	emergency response plan
FHSS	frequency-hopping spread spectrum
GRC	ground risk class
GM	guidance material
GNSS	Global Navigation Satellite System
HMI	human machine interface
ISM	industrial, scientific and medical
JARUS	Joint Authorities for Rulemaking on Unmanned Systems
METAR	aviation routine weather report
MCC	multi-crew cooperation
MTOM	maximum take-off mass
NAA	national aviation authority
OM	operations manual
OSO	operational safety objective
PDRA	predefined risk assessment
RBO	risk-based oversight
RCP	required communication performance
RF	radio frequency
RP	remote pilot
RPS	remote pilot station
SAIL	specific assurance and integrity level
SMM	safety management manual
SORA	specific operations risk assessment
SPECI	aviation selected special weather code
STS	standard scenario
SW	software
TAF	terminal area forecast
TCAS	traffic collision avoidance system
TMPR	tactical mitigation performance requirement
UA	unmanned aircraft
UAS	unmanned aircraft system
VLL	very low level
VLOS	visual line of sight
VO	visual observer
UA	aircraft without any human pilot

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## UAS REGULATIONS AND ACCEPTABLE MEANS OF COMPLIANCE (AMC)

### Regulation 947 – Operation of UAS

#### 947.1 - Subject Matter

This Regulation lays down detailed provisions for the operation of unmanned aircraft systems as well as for personnel, including remote pilots and organizations involved in those operations **in outdoor environment**, which is discussed on the "Drone Registration & Flying Regulation, 2020". This regulation aims to provide detail clarification and guidelines for the implementation of "Drone Registration & Flying Regulation, 2020".

#### GM1 947.1 Subject matter

##### AREAS OF APPLICABILITY OF THE UAS REGULATION


For the purposes of the UAS Regulation, the term ‘operation of unmanned aircraft systems’ does not include indoor UAS operations. Indoor operations are operations that occur in or into a house or a building (dictionary definition) or, more generally, in or into a closed space where the likelihood of a UA escaping into the outside airspace is very low.

#### 947.2 - Definitions

For the purposes of this Regulation, the definitions given in "Drone Registration & Flying Regulation, 2020" shall apply. The following definitions also apply:

1. ‘Unmanned aircraft system’ (‘UAS’) means an unmanned aircraft and the equipment to control it remotely;
2. ‘Unmanned aircraft system operator’ (‘UAS operator’) means any legal or natural person operating or intending to operate one or more UAS;
3. ‘Assemblies of people’ means gatherings where persons are unable to move away due to the density of the people present;
4. ‘UAS geographical zone’ means a portion of airspace established by the competent authority that facilitates, restricts or excludes UAS operations in order to address risks pertaining to safety, privacy, protection of personal data, security or the environment, arising from UAS operations;
5. ‘robustness’ means the property of mitigation measures resulting from combining the safety gain provided by the mitigation measures and the level of assurance and integrity that the safety gain has been achieved;
6. ‘Standard scenario’ means a type of UAS operation in the SPECIFIC category, for which a precise list of mitigating measures has been identified in such a way that the competent authority can be satisfied with declarations in which operators declare that they will apply the mitigating measures when executing this type of operation;

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7. ‘Visual line of sight operation’ (VLOS) means a type of UAS operation in which, the remote pilot is able to maintain continuous unaided visual contact with the unmanned aircraft, allowing the remote pilot to control the flight path of the unmanned aircraft in relation to other aircraft, people and obstacles for the purpose of avoiding collisions;
8. ‘Beyond visual line of sight operation’ (BVLOS) means a type of UAS operation which is not conducted in VLOS;
9. ‘Light UAS operator certificate’ (LUC)/ Remote Operator Certificate (ROC) means a certificate issued to a UAS operator by CAAB as set out in part C of the ANO;
10. ‘Model aircraft club or association’ means an organisation legally established for the purpose of conducting leisure flights, air displays, sporting activities or competition activities using UAS;
11. ‘Dangerous goods’ means articles or substances, which are capable of posing a hazard to health, safety, property or the environment in the case of an incident or accident, that the unmanned aircraft is carrying as its payload, including in particular:
  - a. explosives (mass explosion hazard, blast projection hazard, minor blast hazard, major fire hazard, blasting agents, extremely insensitive explosives);
  - b. gases (flammable gas, non-flammable gas, poisonous gas, oxygen, inhalation hazard);
  - c. flammable liquids (flammable liquids; combustible, fuel oil, gasoline);
  - d. flammable solids (flammable solids, spontaneously combustible solids, dangerous when wet);
  - e. oxidising agents and organic peroxides;
  - f. toxic and infectious substances (poison, biohazard);
  - g. radioactive substances;
  - h. corrosive substances;
12. ‘payload’ means instrument, mechanism, equipment, part, apparatus, appurtenance, or accessory, including communications equipment, that is installed in or attached to the aircraft and is not used or intended to be used in operating or controlling an aircraft in flight, and is not part of an airframe, engine, or propeller;
13. ‘Direct remote identification’ means a system that ensures the local broadcast of information about a unmanned aircraft in operation, including the marking of the unmanned aircraft, so that this information can be obtained without physical access to the unmanned aircraft;
14. ‘Follow-me mode’ means a mode of operation of a UAS where the unmanned aircraft constantly follows the remote pilot within a predetermined radius;
15. ‘Geo-awareness’ means a function that, based on the data, detects a potential breach of airspace limitations and alerts the remote pilots so that they can take immediate and effective action to prevent that breach;

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16. 'Privately built UAS' means a UAS assembled or manufactured for the builder's own use, not including UAS assembled from sets of parts placed on the market as a single ready-to-assemble kit;
17. 'Autonomous operation' means an operation during which an unmanned aircraft operates without the remote pilot being able to intervene;
18. 'Uninvolved persons' means persons who are not participating in the UAS operation or who are not aware of the instructions and safety precautions given by the UAS operator;
19. 'Controlled ground area' means the ground area where the UAS is operated and within which the UAS operator can ensure that only involved persons are present;
20. 'Maximum take-off mass' ('MTOM') means the maximum Unmanned Aircraft mass, including payload and fuel, as defined by the manufacturer or the builder, at which the Unmanned Aircraft can be operated;
21. 'Unmanned sailplane' means an unmanned aircraft that is supported in flight by the dynamic reaction of the air against its fixed lifting surfaces, the free flight of which does not depend on an engine. It may be equipped with an engine to be used in case of emergency.
22. 'Unmanned aircraft observer' means a person, positioned alongside the remote pilot, who, by unaided visual observation of the unmanned aircraft, assists the remote pilot in keeping the unmanned aircraft in VLOS and safely conducting the flight;
23. 'Airspace observer' means a person who assists the remote pilot by performing unaided visual scanning of the airspace in which the unmanned aircraft is operating for any potential hazard in the air;
24. 'Command unit' ('CU') means the equipment or system of equipment to control unmanned aircraft remotely which supports the control or the monitoring of the unmanned aircraft during any phase of flight, with the exception of any infrastructure supporting the command and control (C2) link service;
25. 'C2 link service' means a communication service supplied by a third party, providing command and control between the unmanned aircraft and the CU;
26. 'Flight geography' means the volume(s) of airspace defined spatially and temporally in which the UAS operator plans to conduct the operation under normal procedures described in operation manual;
27. 'flight geography area' means the projection of the flight geography on the surface of the earth;
28. 'Contingency volume' means the volume of airspace outside the flight geography where contingency procedures describe in operation manual;
29. 'Contingency area' means the projection of the contingency volume on the surface of the earth;
30. 'Operational volume' is the combination of the flight geography and the contingency volume;

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31. ‘Ground risk buffer’ is an area over the surface of the earth, which surrounds the operational volume and that is specified in order to minimise the risk to third parties on the surface in the event of the unmanned aircraft leaving the operational volume.
32. "Night" means the hours between the end of evening civil twilight and the beginning of morning civil twilight;
33. "rating" means an authorisation entered on a licence and forming part thereof, stating special conditions, privileges or limitation pertaining to such licence;
34. Assemblies of people have been defined by an objective criterion related to the possibility for an individual to move around in order to limit the consequences of an out-of-control UA. It was indeed difficult to propose a number of people above which this group of people would turn into an assembly of people: numbers were indeed proposed, but they showed quite a large variation. Qualitative examples of assemblies of people are:
  - a. sport, cultural, religious or political events;
  - b. beaches or parks on a sunny day;
  - c. commercial streets during the opening hours of the shops; and
  - d. ski resorts/tracks/lanes.
35. ‘State Drone’ refers to any drone operated by military, paramilitary and other law enforcing agencies under Ministry of Home Affairs. Due to the nature of activities, organizations operating state drones are exempted from the use of the CAAB ANO regarding operation, certification and licensing. However, CAAB regulations for operating UAS/ Drones in civil airspace would be equally applicable for all kinds of State Drones/ UAS as of manned state aircraft.

## AMC1 947.2 (11) Definitions

### **DEFINITION OF ‘DANGEROUS GOOD’**

Under the definition of dangerous goods, blood may be considered to be capable of posing a hazard to health when it is contaminated or unchecked (potentially contaminated). In consideration of regulation 947.5:


1. medical samples such as uncontaminated blood can be transported in the ‘open’, ‘specific’ or ‘certified’ categories;
2. unchecked or contaminated blood must be transported in the ‘specific’ or the ‘certified’ categories. If the transport may result in a high risk for third parties, the UAS operation belongs to the ‘certified’ category. If the blood is enclosed in a container such that in case of an accident, the blood will not be spilled, the UAS operation may belong to the ‘specific’ category, if there are no other causes of high risk for third parties

## GM1 947.2 Definitions

### **DEFINITION OF ‘ASSEMBLIES OF PEOPLE’**

Assemblies of people have been defined by an objective criterion related to the possibility for an individual to move around in order to limit the consequences of an out-of-control UA. It was indeed difficult to propose a number of people above which this group of people would turn into an assembly of people:

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numbers were indeed proposed, but they showed quite a large variation. Qualitative examples of assemblies of people are:

1. sport, cultural, religious or political events;
2. beaches or parks on a sunny day;
3. Commercial streets during the opening hours of the shops.

## GM1 947.2 Definitions

### **DEFINITION OF ‘AUTONOMOUS OPERATION’**

Flight phases during which the remote pilot has no ability to intervene in the course of the aircraft, either following the implementation of emergency procedures, or due to a loss of the command-and- control connection, are not considered autonomous operations.

An autonomous operation should not be confused with an automatic operation, which refers to an operation following pre-programmed instructions that the UAS executes while the remote pilot is able to intervene at any time.

## GM1 947.2 Definitions

### **DEFINITION OF ‘UNINVOLVED PERSON’**

Due to the huge variety of possible circumstances, this GM only provides general guidelines. An uninvolved person is a person that does not take part in the UAS operation, either directly or indirectly. A person may be considered to be ‘involved’ when they have:

1. given explicit consent to the UAS operator or to the remote pilot to be part of the UAS operation (even indirectly as a spectator or just accepting to be overflown by the UAS); and
2. received from the UAS operator or from the remote pilot clear instructions and safety precautions to follow in case the UAS exhibits any unplanned behaviour.
3. In principle, in order to be considered a ‘person involved’, one:
4. is able to decide whether or not to participate in the UAS operation;
5. broadly understands the risks involved;
6. has reasonable safeguards during the UAS operations, introduced by the site manager and the aircraft operator; and
7. is not restricted from taking part in the event or activity if they decide not to participate in the UAS operation.

The person involved is expected to follow the directions and safety precautions provided, and the UAS operator or remote pilot should check by asking simple questions to make sure that the directions and safety precautions have been properly understood.

1. Spectators or any other people gathered for sport activities or other mass public events for which the UAS operation is not the primary focus are generally considered to be ‘uninvolved persons’.




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2. People sitting at a beach or in a park or walking on a street or on a road are also generally considered to be uninvolved persons.

An example: when filming with a UAS at a large music festival or public event, it is not sufficient to inform the audience or anyone present via a public address system, or via a statement on the ticket, or in advance by email or text message. Those types of communication channels do not satisfy the points above. In order to be considered a person involved, each person should be asked for their permission and be made aware of the possible risk(s). This type of operation does not fall into the ‘open’ category and may be classified as ‘specific’ or ‘certified’, according to the risk.

## GM1 947.2 Definitions

### OPERATION OF CATEGORY BASED ON RISK

		
<p><b>Open Category</b>- Low Risk No Pre-approval</p> <p>Limitations: 5 KG, VLOS, 100 feet Height System of zones</p> <p>2 Subcategories: Fly close/over people and Far from People</p> <p>Recreational purpose, model flying, non- commercial photography</p>	<p><b>Specific Category</b> - Increased Risk</p> <p>Certifications of UAS – As Specific</p> <p>Certification of pilots - Specific UAS operator certificate (ROC)</p> <p>BVLOS operations, aerial work, Cinematography...etc</p>	<p><b>Certified Category</b> - Risk as manned aviation</p> <p>Certifications of UAS – As Certified</p> <p style="background-color: yellow;"><b>Certification of pilots - Certified UAS operator certificate (CROC)</b></p> <p>Air Taxi, Package delivery</p>


## GM1 947.2 Definitions

### DEFINITION OF ‘MAXIMUM TAKE-OFF MASS (MTOM)

This MTOM is the maximum mass defined by the manufacturer or the builder, in the case of privately built UAS, which ensures the controllability and mechanical resistance of the UA when flying within the operational limits. The MTOM should include all the elements on board the UA:

1. all the structural elements of the UA;
2. the motors;
3. the propellers, if installed;
4. all the electronic equipment and antennas;
5. the batteries and the maximum capacity of fuel, oil and all fluids; and
6. the heaviest payload allowed by the manufacturer, including sensors and their ancillary equipment.



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### 947.3 - Categories of UAS operations

As per Drone Registration & Flying Regulation, 2020" policy, drones are categorised as ‘A’, ‘B’, ‘C’ and ‘D’ based on the type of users. In addition to that, UAS operations are further divided in ‘Open’, ‘Specific’ or ‘Certified’ category and those categories are defined respectively in Articles 4, 5 and 6, subject to the following conditions:

1. UAS operations in the ‘Open’ category shall not be subject to any prior operational authorisation, nor to an operational declaration by the UAS operator before the operation takes place;
2. UAS operations in the ‘Specific’ category shall require an operational authorisation issued by CAAB pursuant to 947.12 or an authorisation received in accordance with 947.16, or, under circumstances defined in 947.5(5), a declaration to be made by a UAS operator;
3. UAS operations in the ‘certified’ category shall require the special certification of the UAS and the operator and, where applicable, the special licensing of the remote pilot in addition to the requirement mentioned for ‘Specific’ category.

### GM1 947.3 Categories of UAS operations

#### CATEGORIES OF UAS OPERATIONS

1. ‘Open’ Category drone refers to Category ‘A’ types of drone as mentioned in the "Drone Registration & Flying Regulation, 2020" policy.
2. ‘Specific’ Category refers to ‘B’ and ‘C’ categories of drone as mentioned in the "Drone Registration & Flying Regulation-2020" policy.
3. When ‘B’ and ‘C’ Category drone carries any goods or passenger shall be defined as ‘Certified’ category.


### GM1 947.3 Categories of UAS operations

#### BOUNDARIES BETWEEN THE CATEGORIES OF UAS OPERATIONS

1. Boundary between ‘open’ and ‘specific’
  - a. A UAS operation does not belong to the ‘open’ category when at least one of the general criteria listed in 947.4 of the UAS Regulation is not, or limiting scope the UAS is flown only for entertainment purpose.
  - b. A UAS flown any purpose other than entertainment is falls under specific category.
2. Boundary between ‘specific’ and ‘certified’

947.6 of the UAS Regulation and 945.40 of ANO define the boundary between the ‘specific’ and the ‘certified’ category. The first article defines the boundary from an operational perspective, while the second one defines the technical characteristics of the UA, and they should be read together.

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3. A UAS operation belongs to the ‘certified’ category when, based on the risk assessment, CAAB considers that the risk cannot be mitigated adequately without the:
  - a. certification of the airworthiness of the UAS
  - b. certification of the UAS operator; and
  - c. licensing of the remote pilot, unless the UAS is fully autonomous.
  
4. UAS operations are always considered to be in the ‘certified’ category when they:
  - a. are conducted over assemblies of people with a UA that has characteristic dimensions of 3 m or more; or
  - b. involve the transport of people; or
  - c. involve the carriage of dangerous goods that may result in a high risk for third parties in the event of an accident.

#### **947.4 – ‘Open’ Categories of UAS operations**

1. Operations of Category ‘A’ types of drone shall be classified as UAS operations in the ‘open’ category only where the following requirements are met:
  - a. The operation of the unmanned aircraft (UA) is purely on entertainment/ recreational purpose;
  - b. The UA has a maximum take-off mass of less than 5 kg;
  - c. The remote pilot ensures that the UA is kept at a safe distance (at least 100 feet) from people or over assemblies of people who has not given consent for the UA to operate over them;
  - d. The remote pilot ensures that the unmanned aircraft is not flown over assemblies of people;
  - e. During flight, the unmanned aircraft is maintained within 30 metres from the closest point of the surface of the earth, except when overflying an obstacle, as specified in Part A of the ANO.
  - f. The remote pilot keeps the unmanned aircraft in VLOS at all times except when flying in follow-me mode or when using an unmanned aircraft observer as specified in Part A of the ANO;
  - g. During flight, the UA shall follow height limitation (100 feet) and other instructions as mentioned in the serial 8 of “Drone Registration & Flying Regulation-2020” policy.
  - h. During flight, the unmanned aircraft does not carry dangerous goods and does not drop any material;

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- i. Multiple operation of UAS in a single platform or **Swarm Flying** for entertainment purpose requires special operational authorizations, License and adequate Type ratings of Remote PIC.
2. UAS operations in the ‘Open’ category shall also comply with the operational limitations set out in Part A of the ANO.

## GM1 947.4 ‘Open’ category of UAS operations

### **DEFINATION OF TOY DRONE**

Any flying helicopter or model aircraft or flying object for a child to play with, typically a model or miniature replica of something. A toy Drone/RPAS/UAS may have the flight controller/ lower flight time/may include a built-in camera that is generally not of a very high quality and the weight shall be below 249 grams. Moreover, any model aircraft or replica of something having printed age restriction below 14 on their cartoon should be considered as toy.

### **DEFINATION OF RECREATIONAL DRONE**

Recreational drone may have a decent camera system, stabilize gimbal, light weight build material and may have flight controller, may perform limited aerobatics/ maneuvers and weight shall be below 250 grams.


### **DEFINATION OF MODEL AIRCRAFT**

A model aircraft is an unmanned aircraft or, in the case of a scale model, a replica of an existing or imaginary aircraft. Flying models range from simple toy gliders made of balsa wood, card stock or foam polystyrene to powered scale models made from materials such as balsa wood, bamboo, plastic, Styrofoam, carbon fiber, or fiberglass and are sometimes skinned with tissue paper or covering. Some can be very large, especially when used to research the flight properties of a proposed full-scale design. A model aircraft may have high power propulsion system, advanced flight controllers, camera and gimbal system.

## **947.5 - ‘Specific’ category of UAS operations**

1. ‘B’ and ‘C’ categories (As per drone policy) of drone operation, and any other drones whose one of the requirements laid down in order no 947.4 or in Part A of the ANO is not met, UAS operations shall fall under ‘Specific’ category. In such case, a UAS operator shall be required to obtain an operational authorisation pursuant to order no 947.12;
2. UAS which is used by any person(s)/government/non-government agencies for the purpose of educational/research or whereas intended operation is completely non-profitable shall fall under category ‘B’ as specified in serial 4 of "Drone Registration & Flying Regulation-2020" policy;
3. UAS operations conducting for commercial & professional purposes shall fall under category ‘C’ as specified in 4C of "Drone Registration & Flying Regulation-2020" policy;
4. When applying for an operational authorisation pursuant to order no 947.12, the operator shall perform a risk assessment in accordance with order no 947.11 and submit it together with the application, including adequate mitigating measures.

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5. In accordance with point UAS.SPEC.040 laid down in Part B of the ANO, an operational authorisation has to be taken from CAAB, if it considers that the operational risks are adequately mitigated in accordance with order no 947.12.
6. Following shall be specified while issuing the operational authorisation:
  - a. The approval of a single operation or a number of operations specified in time or location(s) or both. The operational authorisation shall include the associated precise list of mitigating measures;
  - b. The approval of a Remote operator Certificate (ROC), in accordance with part C of the ANO.
  - c. Payload or carriage of goods (Not as a delivery service)
7. An operational authorisation or a declaration shall not be required for:
  - a. UAS operators holding a Remote operator Certificate (ROC) with appropriate privileges in accordance with point UAS.ROC.060 of the ANO;
  - b. Operations conducted in the framework of model aircraft clubs and associations that have received an authorisation in accordance with order no 947.16;
8. UAS operations in the ‘Specific’ category shall comply with the operational limitations set out in the operational authorisation as referred to in order no 947.12 or the authorisation as referred to in order no 947.16 as declared by the UAS operator & shall comply with the operational limitations set out in Part A of the ANO.
9. An operator may apply to chairman for any kind of exemption if the operation of UAS is necessary for public interest or national requirement and the operator is unable to comply any part of regulations as mentioned in the ANO.

### **947.6 - ‘Certified’ category of UAS operations**

1. Operations shall be classified as UAS operations in the ‘Certified’ category only where the following requirements are met:
  - a. When the operation is conducted in any of the following conditions:
    - i. Involves the transport of people;
    - ii. Involves drone delivery service.
  - b. When the UAS is certified as per ANO 945.40;
2. In addition, UAS operations of specific category shall be classified as ‘Certified’ category, when the risk of the operation cannot be adequately mitigated as per the guideline for operating in Specific Category.

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## GM1 947.6 ‘Certified’ category of UAS operations


### **UAS OPERATIONS IN THE ‘CERTIFIED’ CATEGORY**

1. The transport of people by drone falls under ‘Certified’ category. Indeed, the UAS must be certified in accordance with 945.40 and the transport of people is one of the UAS operations identified in 947.6 as being in the ‘Certified’ category;
2. flying over assemblies of people with a UAS that has a characteristic dimension of less than 3 m may be in the ‘specific’ category unless the risk assessment concludes that it is in the ‘certified’ category; and
3. the transport of dangerous goods is in the ‘certified’ category if the payload is not in a crash-protected container, such that there is a high risk for third parties in the case of an accident.

### **947.7 - Rules and procedures for the operation of UAS**

1. UAS operations in the ‘Open’ category shall comply with the operational limitations set out in Part A of the ANO;
2. UAS operations in the ‘Specific’ category by ‘B’ or ‘C’ types of drones shall comply with the operational limitations set out in the operational authorisation as referred to in order no 947.12 or the authorisation as referred to in order no 947.16 as declared by the UAS operator;
3. Flight authorisation from Air Defense Operations Center (ADOC BAF) shall be required for any types of drone flying in any zones other than Green Zone;
4. UAS operations in the ‘Certified’ category shall comply with the operational limitations set out in Part B of the ANO;
5. No person shall operate UAS unless it is in a condition for safe operation. Prior to each flight, the remote pilot in command must check the UAS to determine whether it is in a condition for safe operation.
6. No person shall continue flight of the UAS when he or she knows or has reason to know that the UAS is no longer in a condition for safe operation.
7. No person shall operate a UAS unless it is in a condition for safe operation. Prior to each flight, the remote pilot in command must check the UAS to determine whether it is in a condition for safe operation.
8. No person shall continue flight of the UAS when he or she knows or has reason to know that the UAS is no longer in a condition for safe operation.
9. A remote pilot in command must be designated before or during the flight of the UAS. The remote pilot in command is directly responsible for and is the final authority as to the operation of the UAS.
10. The remote pilot in command must ensure that the UAS will pose no undue hazard to other people, other aircraft, or other property in the event of a loss of control of the UAS for any reason.

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11. The remote pilot in command must ensure that the small UAS operation complies with all applicable regulations of this ANO.
12. The remote pilot in command must have the ability to direct the UAS to ensure compliance with the applicable provisions of this chapter. Holds the appropriate category, class, and type rating, if appropriate, for the conduct of the flight.
13. A person shall not operate or act as a remote PIC or Visual Observer (VO) in the operation of more than one UA at the same time. Again, the remote PIC will have the final authority and responsibility for the operation and safety of an UAS operation. Remote PIC may have following scenarios:
  - a. **Persons Manipulating Flight Controls:** A person who does not hold a remote pilot certificate or a remote pilot who has not met the recurrent testing/training requirements of ANO may operate the UAS under this ANO, as long as he or she is directly supervised by a remote PIC and the remote PIC has the ability to immediately take direct control of the UAS. This ability is necessary to ensure that the remote PIC can quickly address any hazardous situation before an accident occurs. The ability for the remote PIC to immediately take over the flight controls could be achieved by using number of different methods. For example, the operation could involve a “buddy box” type system that uses two control stations (CS): one for the person manipulating the flight controls and one for the remote PIC that allows the remote PIC to override the other CS and immediately take direct control of the UAS. Another method could involve the remote PIC standing close enough to the person manipulating the flight controls so as to be able to physically take over the CS from the other person.
  - b. **Transferring Control of the UAS:** Two or more remote pilots transferring operational control (i.e., the remote PIC designation) to each other may do so only if they are both capable of maintaining Visual Line of Sight (VLOS) of the UA and without loss of control (LOC). For example, one remote pilot may be designated as the remote PIC at the beginning of the operation, and then at some point in the operation another remote pilot may take over as remote PIC by positively communicating that he or she is doing so.
  - c. **Autonomous Operation:** A third method could employ the use of an automation system whereby the remote PIC could immediately engage that system to put the UAS in a pre-programmed “safe” mode (such as in a hover, in a holding pattern, or “return home”). An autonomous operation is generally considered as an operation in which the remote pilot inputs a flight plan into the control stations (CS), which sends it to the autopilot onboard the UAS. During automated flight, flight control inputs are made by components onboard the aircraft, not from a CS. Thus, the remote PIC could lose the control link to the UAS and the aircraft would still continue to fly the programmed mission/return home to land. During automated flight, the remote PIC also must have the ability to change routing/altitude or command the aircraft to land immediately. The ability to direct the UAS may be through manual manipulation of the flight controls or through commands using automation. The remote PIC must retain the ability to direct the UAS to ensure compliance with the requirements of ANO.
14. In an in-flight emergency requiring immediate action, the remote pilot in command may deviate from any rule of this ANO to the extent necessary to meet that emergency. Each remote pilot in command who deviates from a rule must send a written report of that deviation to the competent authority of CAAB.

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15. No person shall operate a UAS in a careless or reckless manner so as to endanger the life or property of another; or allow an object to be dropped from a UAS in a manner that creates an undue hazard to persons or property. If the operation is required to be dropped from the UAS (eg. Life jackets/ rafts) need to be mentioned in operational authorization.
16. No person shall operate a UAS from a moving aircraft; or from a moving land or water-borne vehicle unless UAS is flown over a sparsely populated area and is not transporting another person's property for compensation or hire.
17. A UAS must be maintained in a condition for safe operation. Prior to flight, the remote PIC is responsible for conducting a check of the UAS to verify it is actually in a condition for safe operation.
18. Twilight and Operations at Night: Twilight is the period of sunset until 30 minutes after sunset and morning twilight is the period of 30 minutes prior to sunrise until sunrise UAS operations occur during civil twilight, the UAS must be equipped with anti-collision lighting visible for at least 5 km. However, the remote PIC may reduce the visible distance of the lighting to less than 5 km during flight if he or she has determined that it would be in the interest of safety to do so. UAS operations at night shall occur only under the two risk mitigation measures.
  - a. First, the remote PIC must have completed either an initial knowledge test or recurrent training that have been updated to include night operations.
  - b. Second, the UAS must have anti-collision lighting that is visible for at least 5 km. The remote pilot may rely upon manufacturer statements indicating the anti-collision lighting is visible for 5 km. However, the remote pilot ultimately remains responsible for verifying that anti-collision lighting is operational, visible for 5 km, and has a flash rate sufficient to avoid a collision at the operating location.
19. A certificated remote pilot receives night operations privileges and may operate at night only after completing either a knowledge test that contains questions on night physiology and night visual illusions.
20. Operations over Open-Air Assemblies of Persons. Remote pilots are prohibited from operating a UAS operation in sustained flight over open-air assemblies, unless the operation meets the requirements of this ANO
21. VLOS Aircraft Operation. The remote PIC and person manipulating the controls must be able to see the UAS at all times during flight. UAS must be operated closely enough to ensure visibility requirements are met during small UAS operations. This requirement also applies to the VO, if used, during the aircraft operation. The person maintaining VLOS may have brief moments in which he or she is not looking directly at or cannot see the UAS, but still retains the capability to see the UAS or quickly maneuver it back to VLOS. These moments may be necessary for the remote PIC to look at the controller to determine remaining battery life or for operational awareness. Should the remote PIC or person manipulating the controls lose VLOS of the UAS, he or she must regain VLOS as soon as practicable. Even though the remote PIC may briefly lose sight of the UAS, the remote PIC always has the see-and-avoid responsibilities set out in this ANO. The circumstances that may prevent a remote PIC from fulfilling those responsibilities will vary, depending on factors such as the type of UAS, the operational environment, and distance between the remote PIC and the UAS. For this reason, no specific time interval exists in which interruption of VLOS is permissible, as it would have the effect of potentially allowing a hazardous interruption



of the operation. If the remote PIC cannot regain VLOS, the remote PIC or person manipulating the controls should follow pre-determined procedures for the loss of VLOS. The capabilities of the small UAS will govern the remote PIC’s determination as to the appropriate course of action. For example, the remote PIC may need to land the UAS immediately, enter hover mode, or employ a return-to-home sequence. The VLOS requirement does not prohibit actions such as scanning the airspace or briefly looking down at the small unmanned aircraft CS.

- 22. Unaided Vision. VLOS must be accomplished and maintained by unaided vision, except vision that is corrected by the use of eyeglasses (spectacles) or contact lenses. Vision aids, such as binoculars, may be used only momentarily to enhance situational awareness. For example, the remote PIC, person manipulating the controls, or VO may use vision aids to avoid inadvertently flying over persons or conflicting with other aircraft. First person view devices may be used during operations, but do not satisfy the VLOS requirement.
- 23. The use of a VO is optional. The remote PIC may choose to use a VO to supplement situational awareness and VLOS. Although the remote PIC and person manipulating the controls must maintain the capability to see the UAS, using one or more VOs allows the remote PIC and person manipulating the controls to conduct other mission-critical duties (such as checking displays) while still ensuring situational awareness of the UAS. The VO must be able to communicate effectively with regard to the following:
  - a. The UAS location, attitude, altitude, and direction of flight;
  - b. The position of other aircraft or hazards in the airspace; and
  - c. The determination that the UAS does not endanger the life
  - d. Property of another.
- 24. To ensure the VO can carry out his or her duties, the remote PIC must ensure the VO is positioned in a location where the VO is able to see the small unmanned aircraft sufficiently to maintain VLOS. The remote PIC can do this by specifying the location of the VO.
- 25. VLOS at Night: Prior to a small UAS operation at night, the remote PIC should ensure he or she will be able to keep the UAS within the intended area of operation and within VLOS for the duration of the operation. In almost all cases involving operations at night, the remote PIC may need to restrict the operational area of the UAS. Reduced lighting and contrast at night may make it difficult for remote pilots to fulfill the requirements requiring remote pilots to maintain the capability of visually discerning the location, attitude, altitude, and direction of the flight of the aircraft. A remote pilot cannot solely rely on the small unmanned aircraft’s anti-collision lighting, Ground Control Station (GCS) telemetry data displays, or a combination of the two for compliance with ANO.
- 26. The remote PIC must complete a preflight familiarization, inspection, and other actions, such as crewmember briefings, prior to beginning flight operations (see, Sample Preflight Assessment and Inspection Checklist).
- 27. The remote PIC must conduct an assessment of the operating environment.
- 28. Remote PIC must determine that the visibility from the CS is at least 5 km and that the UAS maintains at least 500 feet below clouds and at least 2,000 feet horizontally from clouds. Obtaining



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local aviation weather reports that include current and forecast weather conditions is one means of determining visibility and cloud clearance. The UAS must be operated in accordance with the following limitations:

- a. Cannot be flown faster than a groundspeed of 44 knots (50 miles per hour); in green zone.
  - b. Minimum visibility, as observed from the location of the CS, may not be less than 3 statute miles (sm); and
  - c. Minimum distance from clouds being no less than 500 feet below a cloud and no less than 2000 feet horizontally from the cloud
29. A remote PIC has a responsibility to operate the UAS so that it remains clear of and yields to all other aircraft. The remote PIC must be aware of other aircraft, persons, and property in the vicinity of the operating area, and maneuver the unmanned aircraft to avoid collision. The remote PIC must take action to ensure other aircraft will not need to maneuver to avoid colliding with the UAS.
30. No pilot fly more than one UAS in a specific time, unless he is swarm rated.
31. Considering the public interest chairman may allow any exemptions on the provision of ANO related to UAS operation.
32. No Pilot is authorized to fly drone after consuming alcohol in the last 24 hours.

### **947.8 - Rules and procedures for the remote pilot license**

1. A person shall not act either as remote pilot-in-command or as remote co-pilot of an UAS in any of the following UAS categories as endorsed with the license unless that person is the holder of a remote pilot license issued in accordance with the provisions of this ANO:
  - a. Aero plane (Any forms of Fixed Wing/VTOL/Tilt Rotor)
  - b. Rotorcraft (Single/Multirotor Except Tilt Rotor & VTOL)
  - c. Powered-lift
  - d. Free balloon.
2. Remote pilots operating UAS shall comply with the competency requirements set out in ANO (requirement ref) and shall have the following competencies:
  - a. ability to apply operational procedures (normal, contingency and emergency procedures, flight planning, pre-flight and post-flight inspections);
  - b. ability to manage aeronautical communication;
  - c. manage the unmanned aircraft flight path and automation;
  - d. leadership, teamwork and self-management;

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- e. problem solving and decision-making;
  - f. situational awareness;
  - g. workload management;
  - h. Coordination or handover, as applicable.
3. In order to fly certain ‘A’, ‘B’ and ‘C’ category of drones, an operator must obtain a Remote Pilot Certificate/License either from CAAB or from any member state of ICAO.
4. A remote pilot must pass the aeronautical knowledge & flight competency test conducted by the CAAB. Details on the aeronautical knowledge test and Practical Flight Demonstration are given in Part D of the ANO. Details of the remote pilot license are given below;
- a. Remote Pilot License (Open): A remote pilot may undertake self-study in many ways in order to obtain a certificate of competency for flying Class ‘A’ type drone
    - i. If the drone weighs more than 248 grams;
    - ii. Or if the drone controller range is more than 100 meter.
  - b. Remote Pilot License (Specific): The ‘B’, and ‘C’ types of drone user need to take this type of certificate/license before flying respective types of drone. The UAS operator is therefore required to pass the exam.

Note:

- i. The remote pilot may also undertake this study as classroom training, e-learning or similar training at a training facility to pass the exam in CAAB;
  - ii. The remote pilot needs to pass the aeronautical knowledge & flight competency test conducted by the CAAB.
- c. Remote Pilot License (Certified): The ‘B’, and ‘C’ types of drone user intends to carry any passenger or goods need to take this type of certificate/license before flying respective types of drone. The UAS operator is therefore required to pass the exam conducted by the CAAB

Note:

- i. The remote pilot may also undertake this study as classroom training, e-learning or similar training at a training facility to pass the exam in CAAB;
- ii. Pass the theoretical exam & flight competency test conducted by CAAB;
- iii. The remote pilot needs to pass the aeronautical knowledge & flight competency test conducted by the CAAB.

**5. Certified Remote pilots shall have valid Class 3 medical certification approved by CAAB.**

6. Pilots who have any License issued by any other member state of ICAO requires validation of the License.

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7. Military UAS Pilot who has any UAS/Drones license/certificate shall require only to pass the flight competency test to get the required license.
8. If UAS weighs more than 249 grams remote pilot must have ratings and endorsements in license. Remote pilots may have multiple ratings as following

Basis of Ratings	Type Ratings	Privileges
Lighting Condition	Night Ratings	Operators are capable to fly at night
Airspace	Instrument Ratings	Can fly from dedicated ground station which excludes from autonomous flying
	Confined Airspace	Pilots can fly in a closed and confined airspace. Pilots are privileged to flown over assemblies of people.
	BVLOS	Operators are privileged to fly beyond line of sight
Structure	Fixed Wing	Operators are privileged to fly aircraft like structures/ VTOLS/ Tilt Rotor
	Single Rotor	Operators are privileged to fly a single main rotors, a tail rotors/ NOTAR. This excludes from any Multirotor
	Multirotor	Operators are privileged to fly all sorts of multirotor which excludes from single rotor or Contra Rotor / Counter meshing rotors
Speed	Jet	Operators are privileged to fly a jet engine UAS
	Balloon	Operators are privileged to fly a Balloon or blimp UAS
Fuel	Hybrid	Operators are privileged to fly Hybrid & Liquid Fuel UAS
Multiple UAS	Swarm	Operators are privileged to fly more than one UAS in a single time from single/multiple GCS (Ground Control Station)


### GM1 to 947.8 - Rules and procedures for the competency of remote pilots (3)

The license demonstrates that an operator understands the regulations, operating requirements, and procedures for safely flying of drones. A remote pilot shall obtain the knowledge needed to pass the exam for a certificate of remote pilot competency. The purpose of this self-study is to acquire some basic competency and familiarize themselves with the UA, as well as with the UAS operations they want to conduct.

1. Reading the manual or leaflet provided by the UA manufacturer;
2. Reading related information or watching instructional films;
3. Obtaining information from others who have already gained experience in flying a UA;
4. The remote pilot may also undertake this study as classroom training, e-learning or similar training at a training facility.

### GM1 to 947.8 - Rules and procedures for the competency of remote pilots (4)

The comparison of the License Requirement and Privileges will be as follows

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	<b>Open</b>	<b>Specific</b>	<b>Certified</b>
Purpose of Flying	Purely Entertainment when Drone weighs above 248gm	Commercial / Non-Commercial activities	Carrying of Passenger/ Goods
BVLOS Ops	Not Permitted	Permitted	Permitted

## GM1 to 947.8 - Rules and procedures for the competency of remote pilots (4-1)

### Topics of aeronautical knowledge test

1. Regulations
  - a. General
  - b. Operating Rules
  - c. Remote Pilot Certification
  - d. Waivers
  - e. Operations Over People
2. Airspace Classification and Operating Requirements
  - a. Airspace Classification
  - b. Airspace Operational Requirements
3. Weather
  - a. Sources of Weather
  - b. Effects of Weather on Performance
4. Loading and Performance
5. Operations
  - a. Radio Communications Procedures
  - b. Airport Operations
  - c. Emergency Procedures
  - d. Aeronautical Decision-Making
  - e. Physiology
  - f. Maintenance and Inspection Procedures

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Note: Details Exam syllabus is given in PART-I

### Examination prerequisites

Candidates must apply to Chairman, CAAB for appearing any exam related to UAS. However, Candidates for exams must create an account on the CBE-PEL Exam Management System while wanted to complete the process through online system.

NOTE: Applicants must be able to read the examination questions in English without assistance.

### Time limits and pass marks

Examination	Questions	Time limit	Pass mark
Remote Pilot License (Private)	50	1 hours	75%
Remote Pilot License (Specific)	100	2 hours	75%
Remote Pilot License (Certified)	100	2 hours	75%

### Re-taking of examinations

In case of failure in the exam, a participant cannot apply to CAAB within 14 days from the date of appearing exam.


## 947.9 - Minimum age for remote pilots

1. The minimum age for remote pilots operating a UAS in the SPECIFIC category shall be 18 years.
2. Following the recommendation provided by the manufacturer on the age limitation, an operator can operate drone weighing below 5 kg for entertainment purpose in Green Zone. Minimum age to receive a Remote Pilot License is 16 years.
3. No age limitation is applicable for an individual operating under the direct supervision of a remote pilot having remote pilot license complying with paragraph 1 and 947.8.

## 947.10 - Rules and procedures for the airworthiness of UAS

1. Locally assembled / fabricated UAS/ model aircraft will be registered after flight competency test in CAAB designated airspace if the UAS has no characteristics performance limitation defined. As of Flight Competency Test.
2. UAS having flight performance and limitations published by manufacturer will be granted airworthiness certificate.
3. UAS used in operations for carrying 'Passenger/goods' shall comply with the FAA/EASA/ICAO Member States' design approval regulation and follow the CAAB technical requirements and rules/procedures for the airworthiness certifications indicated in ANO. CAAB currently accepts design approval provided by any member state of ICAO. However in case of carrying goods

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airworthiness certificate of the UAS may be given for the UAS not having such design approval of FAA/EASA/ICAO member states. In such case CAAB may issue airworthiness certificate after analyzing the Flight Performance Test provided that proposed UAS is authorized to carry goods in any ICAO member states

## 947.11 - Rules for conducting an operational risk assessment


1. An operational risk assessment shall:
  - a. describe the characteristics of the UAS operation;
  - b. propose adequate operational safety objectives;
  - c. identify the risks of the operation on the ground and in the air considering all of the below:
    - i. the extent to which third parties or property on the ground could be endangered by the activity;
    - ii. the complexity, performance and operational characteristics of the unmanned aircraft involved;
    - iii. the purpose of the flight, the type of UAS, the probability of collision with other aircraft and class of airspace used;
    - iv. the type, scale, and complexity of the UAS operation or activity, including, where relevant, the size and type of the traffic handled by the responsible organisation or person;
    - v. the extent to which the persons affected by the risks involved in the UAS operation are able to assess and exercise control over those risks.
  - d. identify a range of possible risk mitigating measures;
  - e. determine the necessary level of robustness of the selected mitigating measures in such a way that the operation can be conducted safely.
2. The description of the UAS operation shall include at least the following:
  - a. the nature of the activities performed;
  - b. the operational environment and geographical area for the intended operation, in particular overflown population, orography, types of airspace, airspace volume where the operation will take place and which airspace volume is kept as necessary risk buffers, including the operational requirements for geographical zones;
  - c. the complexity of the operation, in particular which planning and execution, personnel competencies, experience and composition, required technical means are planned to conduct the operation;
  - d. the technical features of the UAS, including its performance in view of the conditions of the planned operation and, where applicable, its registration number;

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- e. the competence of the personnel for conducting the operation including their composition, role, responsibilities, training and recent experience.
3. The assessment shall propose a target level of safety, which shall be equivalent to the safety level in manned aviation, in view of the specific characteristics of UAS operation.
  4. The identification of the risks shall include the determination of all of the below:
    - a. the unmitigated ground risk of the operation taking into account the type of operation and the conditions under which the operation takes place, including at least the following criteria:
      - i. VLOS or BVLOS;
      - ii. population density of the overflowed areas;
      - iii. flying over an assembly of people;
      - iv. the dimension characteristics of the unmanned aircraft.
    - b. the unmitigated air risk of the operation taking into account all of the below:
      - i. the exact airspace volume where the operation will take place, extended by a volume of airspace necessary for contingency procedures;
      - ii. the class of the airspace;
      - iii. the impact on other air traffic and air traffic management (ATM) and in particular:
        - a) the altitude of the operation;
        - b) controlled versus uncontrolled airspace;
        - c) aerodrome versus non-aerodrome environment;
        - d) airspace over urban versus rural environment;
        - e) separation from other traffic.
  5. The identification of the possible mitigation measures necessary to meet the proposed target level of safety shall consider the following possibilities:
    - a. containment measures for people on the ground;
    - b. strategic operational limitations to the UAS operation, in particular:
      - i. restricting the geographical volumes where the operation takes place;
      - ii. restricting the duration or schedule of the time slot in which the operation takes place;
    - c. strategic mitigation by common flight rules or common airspace structure and services;

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- d. capability to cope with possible adverse operating conditions;
  - e. organisation factors such as operational and maintenance procedures elaborated by the UAS operator and maintenance procedures compliant with the manufacturer's user manual;
  - f. the level of competency and expertise of the personnel involved in the safety of the flight;
  - g. the risk of human error in the application of the operational procedures;
  - h. the design features and performance of the UAS in particular:
    - i. the availability of means to mitigate risks of collision;
    - ii. the availability of systems limiting the energy at impact or the frangibility of the unmanned aircraft;
    - iii. the design of the UAS to recognised standards and the fail-safe design.
6. The robustness of the proposed mitigating measures shall be assessed in order to determine whether they are commensurate with the safety objectives and risks of the intended operation, particularly to make sure that every stage of the operation is safe.

### GM1 to AMC1 947.11 Rules for conducting an operational risk assessment

The operational risk assessment required by 947.11 of the UAS Regulation may be conducted using the methodology described with CAAB UAS Risk Assessment Matrix. SORA or other methodologies might be used by the UAS operator as alternative means of compliance.


### AMC1 947.2 (11) : the personal in charge of duties essential to the UAS operation;

The following are provisions applicable to UAS operators in relation to ensuring the proficiency, competency and clear duty assignment to the personnel in charge of duties essential to the UAS operation. UAS operators may decide to expand these requirements as applicable to its operation.

1. Training and qualifications for the personnel in charge of duties essential to the UAS operation
  - a. The UAS operator should ensure that all the personnel in charge of duties essential to the UAS operation (i.e. any people involved in the operation) are provided with competency-based theoretical and practical training specific to their duties that consists of the following elements:
    - i. the UAS regulation,
    - ii. UAS airspace operating principles,
  - b. The basic competencies from the competency framework that are necessary for staff to be adequate for the operation, to ensure safe flight, are as follows:
    - i. the UAS regulation,
    - ii. UAS airspace operating principles,

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- iii. airmanship and aviation safety,
  - iv. human performance limitations,
  - v. meteorology,
  - vi. navigation/charts,
  - vii. UA knowledge,
  - viii. operating procedures,
  - ix. assignment of tasks to the crew,
  - x. establishment of step-by-step communications, and
  - xi. coordination and handover.
- c. Familiarisation with the 'specific' category of operations
- i. The training programme should be documented (at least the training syllabus should be available).
  - ii. Evidence of training should be presented for inspection upon request from the competent authority or authorised representative.

## 2. Visual Observer (VO)


The VO's main responsibilities should be to:

- a. perform unaided visual scanning of the airspace where the UA is operating for any potential hazard in the air;
- b. maintain awareness of the position of the UA through direct visual observation or through assistance provided by an electronic means; and
- c. alert the remote pilot if a hazard is detected and assist in avoiding or minimising the potential negative effects.

## 3. Remote pilot

- a. The remote pilot has the authority to cancel or delay any or all flight operations under the following conditions:
  - i. the safety of persons is threatened; or
  - ii. property on the ground is threatened; or
  - iii. other airspace users are in jeopardy; or
  - iv. there is a violation of the terms of this authorisation.

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- b. If VOs are used, then the remote pilot should ensure that the necessary VOs are available and correctly placed, and that the communications with them can be adequately performed.
  - c. The remote pilot should ensure that the UA remains clear of clouds, and that the ability of the remote pilot, or one of the VOs, to perform unaided visual scanning of the airspace where the unmanned aircraft is operating for any potential collision hazard is not hampered by clouds.
4. Multi-crew cooperation (MCC)
- a. In applications where MCC might be required, the UAS operator should:
    - i. include procedures to ensure coordination between the remote crew members with robust and effective communication channels. Those procedures should cover as a minimum:
      - a) the assignment of tasks to the remote crew members; and
      - b) the establishment of step-by-step communication; and
    - ii. ensure that the training of the remote crew covers MCC.
5. The remote crew is fit to operate
- a. The UAS operator should have a policy defining how the remote crew can declare themselves fit to operate before conducting any operation.
  - b. The remote crew shall declare that they are fit to operate before conducting any operation based on the policy defined by the UAS operator.
6. Maintenance staff
- a. Any staff member authorised by the UAS operator to perform maintenance activities should have been duly trained regarding the documented maintenance procedures.
  - b. Evidence of training should be presented for inspection upon request from the competent authority or authorised representative.
  - c. The UAS operator may declare that the maintenance team has received training regarding the documented maintenance procedures; however, evidence of this training shall be made available upon request from the competent authority or authorised representative.

(a), (b) and (c) of paragraph 1 of order no 947.40

### **947.12 - Authorizing operations in the ‘Specific’ category**

- 1. Risk assessment and the robustness of the mitigating measures that the UAS operator proposes to keep the UAS operation safe in all phases of flight will be extensively evaluated by CAAB
- 2. Operational authorisation shall be granted when the evaluation would be that:
  - a. The operator has valid certificate/license
  - b. The operator has submitted the CAAB approved Risk Mitigation Form;

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- c. The operator has provided a statement confirming that the intended operation complies with any applicable national rules relating to it, in particular, regarding privacy, data protection, liability, insurance, security and environmental protection.
3. When the operation is not deemed sufficiently safe, the applicant will be informed accordingly, giving reasons for its refusal to issue the operational authorisation.
  4. The operational authorisation specifies details as:
    - a. the scope of the authorisation
    - b. the SPECIFIC conditions that shall apply:
    - c. to the UAS operation and the operational limitations;
    - d. to the required competency of the UAS operator and, where applicable, of the remote pilots;
    - e. to the technical features of the UAS, including the certification of the UAS, if applicable;
    - f. the following information:
    - g. the registration number of the UAS operator and the technical features of the UAS;
    - h. a reference to the operational risk assessment developed by the UAS operator;
    - i. the operational limitations and conditions of the operation;
    - j. the mitigation measures that the UAS operator has to apply;
    - k. the location(s) where the operation is authorised to take place;
    - l. all documents and records relevant for the type of operation and the type of events.
    - m. Any other applicable required documents as per “Drone Registration and Flying Regulation, 2020” policy.
    - n. Upon receipt of the declaration referred to in paragraph 5 of 947.5, CAAB
      - i. verify that it contains all elements set out in paragraph 2 of point UAS.SPEC.020 of the ANO
      - ii. if this is the case, provide the UAS operator with a confirmation of receipt and completeness without undue delay so that the operator may start the operation.

**AMC1 947.12(5) authorizing operations in the ‘B & C’ category can be seen in Part E**

1. CAAB provides an automatic acknowledgement of receipt when the submission of operational declarations has been successful.

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2. For a submission to be considered successful, the online system shall check that all the required information has been provided. Otherwise, the system shall indicate to the submitter which parts of the information still need to be added to complete the submission of the declaration (e.g. fields to be filled in, compliance with requirements or statements to be accepted or acknowledged, etc.).

### **947.13 - Foreign Registered UAS & Operator**


1. When a foreign UAS operator intends to conduct an operation in the ‘Specific’ category in the airspace of Bangladesh, the UAS operator shall provide CAAB the intended operation with an application accordance with Part B Specific Category of UAS Operations including the following information:
  - a. Memorandum of agreement (MOA) / Memorandum of understanding (MOU)/Any Agreement between the Bangladeshi Organisation and the Foreign Operator for conducting such operation for the requirement of Bangladeshi Organisation;
  - b. Valid license copy of the operator indicating capability of operating intended UAS;
  - c. Valid license/registration number of the UAS; and
  - d. Special security clearance.

Upon receipt of the application set out in paragraph 1, CAAB assess it without undue delay and provide required authorisation. Upon receipt of that confirmation, the UAS operator may start the intended operation in accordance with 947.12.

### **947.14- Registration of UAS**


1. Where UAS weighs above 248 grams or controller range is more than 100 meter for whatever the purpose it may be flown is required to be registered into the CAAB Drone registration system;
2. No person shall operate a UAS that is eligible for registration unless one of the following criteria has been satisfied:
  - a. The UAS weighs less than 248 grams on takeoff, including everything that is on board or otherwise attached to the aircraft; or
  - b. The UAS belongs to the Military, Paramilitary or Security Organisation of Bangladesh.
3. A UAS shall be registered under this part only when the aircraft is not registered under the laws of a foreign country and is:
  - a. Owned by a Bangladesh citizen;
  - b. Owned by an individual citizen of a foreign country lawfully admitted for permanent residence in Bangladesh;

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- c. Owned by an organization not a citizen of the Bangladesh when the organization is doing business under the laws of the Bangladesh or and the aircraft is based and primarily used in Bangladesh; or
  - d. A UAS of the Bangladesh Government (if needed);
4. To register a UAS in Bangladesh, a person must provide the information correctly as asked vide online registration form. A copy of the form with guideline is given at CAAB website. Upon submission of this information, the CAAB verifies the information and issues a Certificate of Aircraft Registration to that person.
    1. A UAS must be registered by its owner using the legal name and other information of its owner, unless the owner is less than 14 years of age. If the owner is less than 14 years of age, then the UAS must be registered by a person who is at least 14 years of age.
    2. Registration is an evidence of UAS ownership and cannot be given to other person/organisation without CAAB permission. Ownership change form has to be filled up in such case for updating the information.
  5. Each applicant shall pay the respective fee as applicable to CAAB manually or through the web-based aircraft registration system.
  6. Persons intending to use the UAS as other than a model aircraft. Each applicant for a Certificate of Aircraft Registration issued under this part must submit all the following information to the Registry:
    - a. Applicant name, National ID (or Birth Certificate if below 18) and, for an applicant other than an individual, the name of the authorized representative applying for a Certificate of Aircraft Registration;
    - b. Applicant's physical address and, for an applicant other than an individual, the physical address for the authorized representative and or the mailing address;
    - c. Applicant's email address or, for applicants other than individuals, the email address of the authorized representative;
    - d. The UAS manufacturer and model name;
    - e. The UAS serial number, if available;
    - f. Other information as required by the Chairman, CAAB.
  7. Individuals intending to use the UAS exclusively as a model aircraft. Each applicant for a Certificate of UAS Registration issued under this part must submit all the following information to the Registry:
    - a. Applicant name and National ID (Or Birth Certificate if below 18);
    - b. Applicant's physical address and if the applicant does not receive mail at their physical address, a mailing address must also be provided.
    - c. Applicant's email address.

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- d. Other information as required by the Chairman, CAAB.
8. Provision of information. The information identified in paragraphs (6) and (7) of this section must be submitted to the Registry through the Web-based UAS registration system in a form and manner prescribed by the Chairman, CAAB. However, individual may submit the hard copies of all the forms in case of non-availability or difficulties in accessing the CAAB Web-based UAS registration system.
9. Issuance of Certificate of UAS registration. The CAAB will issue a Certificate of UAS Registration upon completion of the application requirements provided in paragraph (6) or (7) of this section as applicable.
10. The UAS operators shall display their registration number on every unmanned aircraft meeting the conditions described in paragraph 1.
11. Registration Criterion.
- a. Effective date of registration. An UAS is considered registered when the applicant receives a Certificate of UAS Registration for the specific UAS. The effective date of registration is shown by the date of issue on the Certificate of Aircraft Registration issued for the UAS.
  - b. Registration renewal. A Certificate of Aircraft registration issued under this part expires two years after the date of issue unless it is renewed. A renewal certificate issued under this paragraph expires two years from the expiration date of the previous certificate.
  - c. Other events affecting effectiveness of Certificate. Each Certificate of Aircraft Registration issued by the CAAB under this subpart is effective, unless registration has ended by reason of having been revoked, canceled, expired, or the ownership is transferred, until the date upon which one of the following events occurs:
    - i. Subject to the Convention on the International Recognition of Rights in Aircraft when applicable, the aircraft is registered under the laws of a foreign country;
    - ii. The UAS is destroyed or scrapped;
    - iii. The holder of the Certificate of UAS Registration loses citizenship;
    - iv. Thirty days have elapsed since the death of the holder of the Certificate of UAS Registration;
    - v. The owner, if an individual who is not a citizen of Bangladesh, loses status as a resident alien, unless that person becomes a citizen of the Bangladesh at the same time;

## AMC1 947.14(10) Registration of UAS

### DISPLAY OF REGISTRATION INFORMATION

1. If the UAS operator owns the UAS, it should display on the UA the registration number received at the end of the registration process in a way that this information is readable at least when the UA is on the ground without the need for any devices other than eyeglasses or corrective lenses.

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2. A QR code (quick response code) may be used.
3. If the size of the UA does not allow the mark to be displayed in a visible way on the fuselage, or the UA represents a real aircraft where affixing the marking on the UA would spoil the realism of the representation, a marking inside the battery compartment is acceptable if the compartment is accessible.
4. If a UAS operator uses a UAS owned by a third party, the UAS operator that operates the UAS should:
  - a. register itself;
  - b. display its registration number on the UA; and
  - c. upload the registration number into the e-identification system, if the UA is equipped with one.

### **947.15 – Flight Permissions & Operational conditions for UAS geographical zones**

1. Procedure mentioned in the "Drone Registration & Flying Regulation, 2020" policy shall be applied for the authorisation of drone flying.
2. All UAS need to be in accordance with geographic zones. As per the Drone policy, UAS geographical zones are divided into three zones (Red, Yellow and Green) considering the safety, security, privacy, or environmental issues.
3. UAS geographical zones, including their period of validity, is publicly available in a GIS Map. The map indicates the zones set out in "Drone Registration & Flying Regulation, 2020" policy.
4. Based on a risk assessment, CAAB has designated certain geographical zones in which UAS operations will be conducted without prior permission. All the drone flying permissions will be given through web-based software after verifying the data uploaded by the applicants. However, permission process will be performed manually in case of non-availability of such automated system due to technical.
5. Based on the paras 1-4, UAS flight permission will be given mentioning place and time and all the UAS flying information shall be uploaded on the websites for better awareness.
6. D AT of FSR Division shall coordinate with concerned agencies and give required approval for flight permission as per drone policy.
7. All users intending to fly at Yellow zone shall apply for flight permission at least 03 (three) working days before the intended flights. Flight permission application must be submitted to CAAB at least 07 (seven) working days before intended operation. User must fill the flight authorization form as prescribed in AMC1 UAS.SPECIFIC.030 (2) Application for an operational authorization.

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8. In case of flying in RED Zone, concerned agencies as mentioned in serial 9(ka) shall have to provide their approval/not approved comment. However, CAAB will consider the request 'Approved' if no comment is received from the concerned agencies after 72 hours from the request.
9. CAAB may not take any permission from the concerned agencies in case the intended drone operation is linked with CAAB operational requirement within the CAAB perimeters. However, D AT of FSR Division shall give such permission to other division of CAAB in coordination with concerned ATC Tower for conducting any such drone operations. Standard permission from other concerned agencies must be taken when intended operations also involve overflying around any other KPIs.
10. In case of national requirement/emergency/national disasters/public interest CAAB may authorize the drone flying in any zones at any time subject to the clearance from Chairman.

### **947.16 - UAS operations in the framework of model aircraft**

1. Model aircraft if may form with association or club, UAS Remote Operator Certificate/ ROC is required;
2. Model aircraft club or association shall request CAAB for authorisation to fly the model aircraft at designated area;
3. CAAB may facilitate a model aircraft flyer who is single person or entity and not a member of any association/club, in a designated geographical area that the person/entity can fly.
4. In any case, occurrences that cause an injury to persons or where the safety of other aircraft was compromised, must be reported by the model club or association to the CAAB
5. A model aircraft based on the nature of operation will get privileges that defines different limitations and conditions from those in the UAS Regulation.
6. Remote pilots of model aircraft are authorized fly in designated airspace


### **GM1 947.16 UAS operations in the framework of model aircraft clubs and associations**

#### **GENERAL**

A model aircraft club and association may obtain authorisation from CAAB that is valid for all their members to operate UAs according to conditions and limitations applicable for the club or association. The model aircraft club and association will submit the procedures to CAAB, and all the members are required to follow the approved procedure. When CAAB is satisfied with the procedures, organizational structure and management system of the model aircraft club and association, it may provide an authorisation that defines different limitations and conditions from those in the UAS Regulation. The authorisation will be limited to the operations conducted within the authorised club or association and within the territory of the state. The authorisation cannot exempt members of the club or association from registering themselves according to 947.14 of the UAS Regulation; however, it may allow a model club or association to register their members on their behalf.

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The authorisation may also include operations by persons who temporarily join in with the activities of the club or association (e.g. for leisure during holidays or for a contest), as long as the procedures provided by the club or association define conditions acceptable to the competent authority.

## GM2 947.16 UAS operations in the framework of model aircraft clubs and associations

### **OPTIONS TO OPERATE A MODEL AIRCRAFT**

Model Aircraft flyers have the following options to conduct their operations:

1. They may operate as members of a model club or association that has received the authorisation from CAAB, as defined in 947.16 of the UAS Regulation. In this case, they shall comply with the procedures of the model club or association in accordance with the authorisation. The authorisation shall define all the deviations from the Regulation granted to the model club or association's members. Members must register themselves in accordance with 947.14 of the UAS Regulation, except when the model aircraft clubs and associations have obtained from the Member State the right to register their members in the registration system;
2. In accordance with 947.15(2) of the UAS Regulation, CAAB may define zones where UAS are exempted from certain technical requirements, and/or where the operational limitations are extended, including mass or height limitations. They may also define different height limitations for those zones;

## GM1 947.16(2)(b)(iii) UAS operations in the framework of model aircraft clubs and associations

### **ACTION IN CASES OF OPERATIONS/FLIGHTS THAT EXCEED THE CONDITIONS AND LIMITATIONS DEFINED IN THE OPERATIONAL AUTHORISATION**


When a model club or association is informed that a member has exceeded the conditions and limitations defined in the operational authorisation, appropriate measures will be taken, proportionate to the risk posed. Considering the level of risk, the model club or association decides whether CAAB shall be informed. In any case, occurrences that cause an injury to persons or where the safety of other aircraft was compromised, must be reported by the model club or association to the CAAB.

### **947.18 – Duties & Responsibilities of CAAB**

Based on the regulation CAAB intends for:


1. enforcing this regulation;
2. issuing, suspending or revoking certificates of UAS operators and licenses of remote pilots operating within the 'certified' category of UAS operations;
3. issuing remote pilots with a proof of completion of an online theoretical knowledge examination according to points UAS.OPEN.020 and UAS.OPEN.040 of the ANO and issuing, amending, suspending, limiting or revoking certificates of competency of remote pilots according to point UAS.OPEN.030 of the ANO;

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4. issuing, amending, suspending, limiting or revoking operational authorisations and ROCs and verifying completeness of declarations, which are required to carry out UAS operations in the SPECIFIC category of UAS operations;
5. keeping documents, records and reports concerning UAS operational authorisations, declarations, certificates of competency of the remote pilots and ROCs;
6. making available in a common unique digital format information on UAS geographical zones identified;
7. issuing a confirmation of receipt and completeness in accordance with 947.12(5)(b) or a confirmation in accordance with paragraph 2 of 947.13; developing a risk-based oversight system for:
  - a. UAS operators that have submitted a declaration or hold an operational authorisation or an ROC
  - b. model clubs and associations that hold an authorisation referred to in 947.16;
8. for operations other than those in the ‘Open’ category, establishing audit planning based on the risk profile, compliance level and the safety performance of UAS operators who have submitted a declaration, or hold a certificate issued by the competent authority;
9. for operations other than those in the ‘Open’ category, carrying out inspections with regard to UAS operators who have submitted a declaration or hold a certificate issued by CAAB inspecting UAS and ensuring that UAS operators and remote pilots comply with this Regulation;
10. implementing a system to detect and examine incidents of non-compliance by UAS operators operating in the ‘Open’ or SPECIFIC categories and reported in accordance with paragraph 2 of 947.19;
11. providing UAS operators with information and guidance that promotes the safety of UAS operations;
12. Establishing and maintaining registration systems for UAS whose design is subject to certification and for UAS operators whose operation may present a risk to safety, security, privacy, and protection of personal data or the environment.
13. Falsification of Applications, Reports, or Records. No person must make or cause to be made—
  - a. Any fraudulent or intentionally false statement on any application for a certificate or approval under this part;
  - b. Any fraudulent or intentionally false entry in any record or report that is required to be kept, made, or used to show compliance with any requirement for the issuance or the exercise of the privileges of any certificate or approval issued under this part;
  - c. Any reproduction for a fraudulent purpose of any certificate or approval issued under this part;
  - d. Any alteration of any certificate or approval issued under this part.

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## GM1 947.18(a) Tasks of CAAB

### **ENFORCEMENT**

CAAB is responsible for enforcing the UAS Regulation, as indicated in ‘Drone Registration and Flying Regulation, 2020’ policy. In making this decision, CAAB consider that most of the UAS operations will occur in areas far from aerodromes, and therefore, the CAAB take necessary assistance from all the law enforcing agency/ security agencies/ ADOC to verify that the UAS operations conducted in such areas are safe. In addition, the issues that are likely to occur more often will be related to noise, privacy and security. Taking all this into account, law enforcement authorities may be well-placed to fulfil that role.


## AMC1 947.18(e) Tasks of CAAB

### **DOCUMENTS, RECORDS AND REPORTS TO BE KEPT**

CAAB keep at least the following documentation:

1. operational authorisations, in accordance with 947.12(2) of the UAS Regulation:
  - a. the initial application for an authorisation as defined in UAS.SPEC.030(3) of Part-B and the associated documents
  - b. the application(s) for updated operational authorisations;
  - c. the final version of the risk assessment performed by the UAS operator, and the supporting material;
  - d. the UAS operator’s statement confirming that the intended UAS operation complies with any applicable rules relating to it, in particular with regard to privacy, data protection, liability, insurance, security and environmental protection, in accordance with 947.12(2)(c) of the UAS Regulation;
  - e. the procedures to ensure that all operations comply within the protection of natural persons with regard to the processing of personal data and on the free movement of such data;
  - f. updated mitigation measures are satisfactory for the operation at the intended location in accordance with 947.13(2) of the UAS Regulation;
  - g. when applicable, a procedure for coordination with the relevant service provider for the airspace if the entire operation, or part of it, is to be conducted in controlled airspace; and
  - h. up-to-date operational authorisation(s) with outlining successive changes.
2. declarations in accordance with 947.12(5) of the UAS Regulation:
  - a. up-to-date declarations with a table outlining successive changes;
  - b. up-to-date confirmations of receipt and completeness, provided in accordance with 947.12(5)(b) of the UAS Regulation, with a table outlining successive changes;
3. remote pilots’ competency:

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- a. proof of competency for remote pilots that have passed the online theoretical knowledge examination;
  - b. certificates of remote pilot competency for remote pilots that have passed the examination; and
  - c. proof of competency or other certificates for remote pilots, for the operational authorisations.
4. UAS Operator / Remote Operator Certificates
- a. initial applications in accordance with UAS.ROC.010(2) of Part-C and associated documents;
  - b. applications for amendments to an existing ROC, and the associated documents; and
  - c. Up-to-date terms of approval in accordance with UAS.ROC.050 of Part-C, with a table outlining the successive changes.
  - d. The records shall be kept for at least for three years after their validity date expires.

## GM1 947.18(n) Tasks of CAAB


### **Falsification, Reproduction, or Alteration**

CAAB relies on information provided by owners and remote pilots of UAS when it authorizes operations or when it has to make a compliance determination. Accordingly, CAAB may take appropriate action against an UAS owner, operator, remote PIC, or anyone else who fraudulently or knowingly provides false records or reports, or otherwise reproduces or alters any records, reports, or other information for fraudulent purposes. Such action could include civil sanctions and the suspension or revocation of a certificate or waiver.

### **947.19 - Safety information & Reporting**

1. Each UAS operator shall report to CAAB and nearest Police Station on any safety-related occurrence/ incidents and exchange information regarding its UAS in compliance with operating regulation immediately after the incident/ occurrence no later than 48 hours while operation of UA causes serious injuries to people or damage to property exceed 50000.00 BDT to repair;
2. CAAB collect, analyze and publish safety information concerning UAS operations in the territory.
3. Upon receiving any of the information referred to in paragraphs 1 and 2, CAAB and concerned Law Enforcing Agencies shall take the necessary measures to address any safety issues on the best available evidence and analysis, considering interdependencies between the different domains of aviation safety, and between aviation safety, cyber security and other technical domains of aviation regulation.
4. In case of Flyaway/ Missing/ Stolen issue of any UAS; Remote Pilot and applicable AOC holder shall immediately inform Civil Aviation Authority via online UAS Occurrences Reporting System and nearest Police Station or via Radio/ Cell phone to the nearest tower.

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## AMC1 947.19(1) Safety information

### INCIDENT REPORT

The remote PIC of the UAS is required to report an accident to the CAAB immediately if it meets any of the following thresholds:

1. Serious injury to any person or any loss of consciousness
2. Damage to any property, other than the UAS, if the cost is greater than BDT 50000.00 (Fifty thousand) to repair.

## AMC2 947.19(1) Safety information


### OCCURRENCE REPORT

According to Regulation, occurrences shall be reported as per the CAAB prescribed 'UAS Occurrence Report' for when they refer to a condition which endangers, or which, if not corrected or addressed, would endanger an aircraft, its occupants, any other person, equipment or installation affecting aircraft operations. Obligations to report which limits the reporting of events for operations with UA for which a certificate or declaration is not required, to occurrences and other safety-related information involving such UA if the event resulted in a fatal or serious injury to a person, or it involved aircraft other than UA. Safety breaches can **only** be investigated where there is **sufficient evidence**, such as photos or video recordings of the breach and the person controlling the drone at the time.

A reporter is a person who is either involved with the Incident or occurrence or possess any form of evidence of the incident/ occurrence supported by valid email and contact number. If a reporter is not involved with the operation, then he/she should complete and submit this form if there is reasonable assurance that someone is flying a drone in an irresponsible manner without a permit (for example, flying close to other aircraft, near aerodromes, or at a high altitude).

1. Reporter Name , Email & Contact Number (not required if he is not involved with flying)
2. UAS remote PIC's name and contact information; (not required if he is not involved with flying)
3. UAS remote PIC's AOC/ ATO number; (not required if he is not involved with flying)
4. UAS registration number issued to the aircraft, (not required if he is not involved with flying)
5. What type of drone was involved including marking & Colors
6. Location of the Accident/ Incident/ Occurrences;
7. Type of Accident/ Incident/ Occurrences
8. It was flying close to an object; It was flying close to people; It flew over the top of me; It was flying near an airport; It was flying near a helicopter/ Airplane; It was flying at night or in fog; I don't think the person flying the drone could see it; The drone was flying too high (above 100 feet); Taking photos of people; It was noisy; UAS Lost in Flying, If Other mention);
9. Date of the Accident/ Incident/ Occurrences;

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10. Time of the Accident/ Incident/ Occurrences;
11. Person(s) injured and extent of injury, if any or known;
12. Property damaged and extent of damage, if any or known; and
13. Description of what happened.
14. Evidence such as photos or videos or witness statements of this incident.

### AMC1 947.19(4) Safety information

#### **FLY AWAY / LOST LINK PROCEDURE**


A “flyaway” is a situation when Remote Pilot is unable to fly drone back to where it originally took off. This may mean landing at an unknown location, or the pilot may completely lose contact with drone, unaware of where it has gone (and has probably crash landed). Most Common Causes for a Drone Flyaway

1. Wind
2. Battery Failure
3. Firmware Issue
4. GPS Error
5. Compass Error

#### **19(4) 1. PROCEDURE FOR UAS FLYAWAY OCCURRENCES**

1. If UAS is connected via the Remote controller
  - a. Activate the aircraft’s Return to Home (RTH). Check whether the mode is functional and/or if the control of the aircraft has been regained
  - b. Turn off and on the controller and try to recover control of the aircraft;
  - c. Enable available obstacle avoidance sensor;
  - d. Look for Identifiable Areas to Land;
  - e. Taking Screenshots of Remote Controller; Specially Location shown on map Distance and direction of UAS Shown on Controller;
  - f. If video streams Land in suitable place or You may just have to hover the drone above a landing location the best you can, and wait for the automatic landing function to kick on;
  - g. Trigger Drone parachute If deployed if landing functions is not working;
  - h. If safe to do so, attempt to power off the motors;
2. If control is not restored

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- a. Keep best try on para (a)
- b. If aircraft flyaway continues, note aircraft battery life, height, speed, heading and wind direction;
- c. Inform nearest Air Traffic Control (ATC), Flight Safety & Regulations & nearest Police station or via 999;
- d. Plot the assumed area
- e. Based on the screen shots you took with your phone, drive toward that location. The idea here is to leave your drone controller on and, hopefully, at least get within range of the drone to get a signal connection again.
- f. Make a report via the Incident reporting tool.

#### **19(4) 2. How to prevent a drone Flyaway**


1. Maintain preflight checklist;
2. Hover and Fly manually before starting an autonomous mission to check Controller, battery, compass, IMU & UAS Flight characteristics;
3. Category A user must fly within Line of Sight;
4. Avoid fly in windy & high temperature day;
5. Orient Environment and missions before flight;
6. Take a Printed map of UAS Coverage area;
7. Install a reflective tape for visual identification;
8. Install RF / GPS UAS tracking device.

### **GM1 947.19(4) Safety information**

#### **Levels of Injury**

Injuries are ranked on a scale of 1 to 6, with Level 1 being a minor injury, Level 2 is moderate, Level 3 is serious, Level 4 is severe, Level 5 is critical, and Level 6 is a non-survivable injury. A serious injury is an injury that qualifies as Level 3 or higher (any fractures). CAAB currently uses serious injury (Level 3) as an injury threshold. It would be considered a “serious injury” if a person requires hospitalization, but the injury is fully reversible (including, but not limited to, head trauma, broken bone(s), or laceration(s) to the skin that requires suturing).

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## 947.20 – Coordination with stake holders

1. CAAB operated BD Drone software (Part of CAAB AT Management Software) shall be used as platform for all the stakeholders for registration, certifications, authorization, surveillance of drone. In case of malfunction /routine maintenance/ system upgradation/ any other unavoidable situation with the software the user shall apply for desired permission manually (through email/ hardcopy) to the chairman giving attention to FSR Division.
2. Security clearances from the state security organizations for drone flying shall be processed via BD Drones for minimizing administrative activities.

## 947.21 – Inspection and Maintenance of UAS

1. Remote Pilot should perform checks of the UAS before and after of each flight to determine if the UAS is in a condition for safe operation.
2. Remote Pilot ensures UAS maintenance, includes scheduled and unscheduled overhaul, repair, inspection, modification, replacement, and system software upgrades of the UAS and its components necessary for flight. Whenever possible, the operator should maintain the UAS and its components in accordance with manufacturer’s instructions. The aircraft manufacturer may provide the maintenance program, or, if one is not provided, the applicant may choose to develop one.

### AMC1 947.21(1) UAS Inspection and Maintenance

Before each flight, the remote PIC must inspect the UAS to ensure that it is in a condition for safe operation, such as inspecting for equipment damage or malfunction(s). The preflight inspection should be conducted in accordance with the UAS manufacturer’s inspection procedures when available (usually found in the manufacturer’s owner or maintenance manual) and/or an inspection procedure developed by the UAS owner or operator.


#### Preflight Inspection Items.

Even if the UAS manufacturer has a written preflight inspection procedure, it is recommended that the remote PIC ensure that the following inspection items are incorporated into the preflight inspection procedure to help the remote PIC determine that the UAS is in a condition for safe operation. The preflight inspection should include a visual or functional check of the following items:

1. Visual condition inspection of the UAS components;
2. Airframe structure (including undercarriage), all flight control surfaces, and linkages;
3. Registration markings, for proper display and legibility;
4. Moveable control surface(s), including airframe attachment point(s);
5. Servo motor(s), including attachment point(s);

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6. Propulsion system, including powerplant(s), propeller(s), rotor(s), ducted fan(s), etc.;
7. Verify all systems (e.g., aircraft and control unit) have an adequate energy supply for the intended operation and are functioning properly;
8. Avionics, including control link transceiver, comm/navigation equipment, and antenna(s);
9. Calibrate UAS compass prior to any flight;
10. Control link transceiver, communication/navigation data link transceiver, and antenna(s);
11. Display panel, if used, is functioning properly;
12. Check ground support equipment, including takeoff and landing systems, for proper operation;
13. Check that control link correct functionality is established between the aircraft and the CS;
14. Check for correct movement of control surfaces using the CS;
15. Check onboard navigation and communication data links;
16. Check flight termination system, if installed;
17. Check fuel for correct type and quantity;
18. Check battery levels for the aircraft and CS;
19. Check that any equipment, such as a camera, is securely attached;
20. Verify communication with UAS and that the UAS has acquired GPS location from at least four satellites;
21. Start the UAS propellers to inspect for any imbalance or irregular operation;
22. Verify all controller operation for heading and altitude;
23. If required by flight path walk through, verify any noted obstructions that may interfere with the UAS; and
24. At a controlled low altitude, fly within range of any interference and recheck all controls and stability.


### UAS Maintenance Procedure

In the interest of assisting varying background levels of UAS knowledge and skill, below is a chart offering conditions that, if noticed during a preflight inspection or check, may support a determination that the UAS is not in a condition for safe operation. Further inspection to identify the scope of damage and extent of possible repair needed to remedy the unsafe condition may be necessary prior to flight.

Condition	Action
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<b>1. Structural or skin cracking</b>	Further inspect to determine scope of damage and existence of possible hidden damage that may compromise structural integrity. Assess the need and extent of repairs that may be needed for continued safe flight operations.
<b>2. Delamination of bonded surfaces</b>	Further inspect to determine scope of damage and existence of possible hidden damage that may compromise structural integrity. Assess the need and extent of repairs that may be needed for continued safe flight operations.
<b>3. Liquid or gel leakage</b>	Further inspect to determine source of the leakage. This condition may pose a risk of fire resulting in extreme heat negatively impacting aircraft structures, aircraft performance characteristics, and flight duration. Assess the need and extent of repairs that may be needed for continued safe flight operations.
<b>4. Strong fuel smell</b>	Further inspect to determine source of the smell. Leakage exiting the aircraft may be present and/or accumulating within a sealed compartment. This condition may pose a risk of fire resulting in extreme heat negatively impacting aircraft structures, aircraft performance characteristics, and flight duration. Assess the need and extent of repairs that may be needed for continued safe flight operations.
<b>5. Smell of electrical burning or arcing</b>	Further inspect to determine source of the possible electrical malfunction. An electrical hazard may pose a risk of fire or extreme heat negatively impacting aircraft structures, aircraft performance characteristics, and flight duration. Assess the need and extent of repairs that may be needed for continued safe flight operations.
<b>6. Visual indications of electrical burning or arcing (black soot tracings, sparking)</b>	Further inspect to determine source of the possible electrical malfunction. An electrical hazard may pose a risk of fire or extreme heat negatively impacting aircraft structures, aircraft performance characteristics, and flight duration. Assess the need and extent of repairs that may be needed for continued safe flight operations.
<b>7. Noticeable sound (decibel) change during operation by the propulsion system</b>	Further inspect entire aircraft with emphasis on the propulsion system components (i.e., motors and propellers) for damage and/or diminished performance. Assess the need and extent of repairs that may be needed for continued safe flight operations.

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<b>8. Control inputs not synchronized or delayed</b>	Discontinue flight and/or avoid further flight operations until further inspection and testing of the control link between the ground control unit and the aircraft. Ensure accurate control communications are established and reliable prior to further flight to circumvent possible loss of control resulting in the risk of a collision or flyaway. Assess the need and extent of repairs that may be needed for continued safe flight operations.
<b>9. Battery casing distorted (bulging)</b>	Further inspect to determine integrity of the battery as a reliable power source. Distorted battery casings may indicate impending failure resulting in abrupt power loss and/or explosion. An electrical hazard may be present, posing a risk of fire or extreme heat negatively impacting aircraft structures, aircraft performance characteristics, and flight duration. Assess the need and extent of repairs that may be needed for continued safe flight operations.
<b>10. Diminishing flight time capability (electric powered propulsion systems)</b>	Further inspect to determine integrity of the battery as a reliable power source. Diminishing battery capacity may indicate impending failure due to exhausted service life, internal, or external damage. An electrical hazard may or extreme heat negatively impacting aircraft structures, aircraft performance characteristics, and flight duration. Assess the need and extent of repairs that may be needed for continued safe flight operations.
<b>11. Loose or missing hardware/fasteners</b>	Further inspect to determine structural integrity of the aircraft and/or components with loose or missing hardware/fasteners. Loose or missing hardware/fasteners may pose a risk of negatively impacting flight characteristics, structural failure of the aircraft, dropped objects, loss of the aircraft, and risk to persons and property on the grounds. For continued safe flight operations, secure loose hardware/fasteners. Replace loose hardware/fasteners that cannot be secured. Replace missing hardware/fasteners.

## 947.22 – Certified Operations of UAS

The UAS is certified pursuant to points

1. Operations shall be classified as UAS operations in the ‘Certified’ category only where the following requirements are met:
  - b. The operation is conducted in any of the following conditions:
    - i. Involves the transport of people;

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- ii. Involves the carriage of dangerous goods, which may result in high risk for third parties in case of accident.
  - iii. Involves drone delivery service.
1. The certification process will be applied if UAS is used to delivery service and passenger services, Operated with intervention of the remote pilot or autonomous
  2. UAS regardless in its size and payload, manned or unmanned; if the purpose of operation is noncommercial operation of UAS shall be followed 947.6 accordingly.
  3. Certified operations are permitted only when the PIC is certified and adequately type rated, UAS itself receives the design acceptance certifications based on risk assessment, ConOPS, and the user receives the Adequate Approval Operation in their AOC.
  4. Applicants must go through the full five phases of the certification process.
  5. CAAB issues air operator certificates based on the type of services and where operations will be conducted. Operators must obtain airspace authorizations before they can begin operations
  6. Certified operations based on the nature of operation will be divide as following
    - a. Drone Delivery Service
    - b. Drone Passenger Service
  7. Operational Authorization for Drone delivery service will be provided when operator meet the minimum safety standard and requirement mentioned in Certified UAS Operations of this ANO.
  8. Operation either passenger or delivery service , operator must fly within the flight envelopes indicated in his operation manual
  9. Operational Authorization for passenger service will be accepted when the applicant has demonstrated UAS capability by holding a design organization approval (DOA) issued by FAA/ EASA or any other competent authorities and meet the requirements mentioned in PART F Certified UAS Operations of this ANO
  10. Operation of the certified UAS is only permitted when following environment is met:
    - a. Daylight conditions, unless in an state emergency
    - b. No rain, no lightning conditions,
    - c. OAT temperatures: -5°C +40 °C,
    - d. Maximum wind below 10 kts, gusting 15 kts,

### **947.23 – Air Operator Certificate**


1. Requirement of air operator certificate is mandatory while operator is engaged for commercial activities as delivery service either cargo or passenger, intended to train drone pilots or activities that engaged with research and development/ monitoring services etc. CAAB issues air operator

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certificates to applicants based on the type of services they plan to provide and where they want to conduct their operations

2. Applicants must go through the full five phases of the certification process
3. Organizations intended to operate training activities requires Air Operator Certificate and must comply the required process indicated in section
4. Though certificate with no limits on the size or scope of operations, operators must obtain airspace authorizations before they can begin operations. Operators are privileged to fly with flight authorization only which must be obtain before conducting operation
5. Operators must comply Appendix C of UATO for getting approval and keep validity of UATO


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## Regulation 945 –UAS System & Miscellaneous

### 945.05–UAS Manufacturer

1. Any manufacturer who intends to manufacture for commercially declare the demonstrated capabilities of their UA to the for a specific operation.
2. Any manufacturer who intends to manufacture for commercially meet the specific compliance which consist of data (tests, analysis, industry consensus standards) and the results or justification used to demonstrate the UAS meets the level of safety which CAAB has established as acceptable.. An applicant shall submit the following information
  - a. Detailed description of the means of compliance; and
  - b. Justification, including any substantiating material, showing that the means of compliance establishes achievement of or equivalency to the safety level.
3. For each model of UAS that is intended to conduct any operation, the manufacturer shall provide with a declaration. manufacturer’s declaration shall, specify the manufacturer of the UAS, the model of the system, the maximum take-off weight of the UAS, the operations that the UA is intended to undertake and the category of UA, such as fixed-wing aircraft, rotary-wing aircraft, hybrid aircraft or lighter-than-air aircraft; and specify that the system meets the means of compliance applicable to the operations for which the declaration was made.
4. The manufacturer’s declaration is invalid if:
  - a. the CAAB has determined that the model of the UA does not meet the terms set out in the means of compliance, or
  - b. the manufacturer has notified the CAAB of an issue related to the design of the model
5. a manufacturer that has made a declaration to the CAAB shall notify the CAAB of any issue related to the design of the model of the UAS that results in the system no longer meeting the technical requirements set out in the means of compliance as soon as possible after the issue is identified.
6. A manufacturer that has made a declaration to the CAAB in respect of a model of a UAS under shall make available to each owner of that model of system:
  - a. maintenance program that includes
    - i. instructions related to the servicing and maintenance of the system; and
    - ii. an inspection program to maintain system readiness;
    - iii. any mandatory actions the manufacturer issues in respect of the system;
  - b. a UAS operating manual that includes:
    - i. a description of the system;

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- ii. the ranges of weights and centers of gravity within which the system may be safely operated under normal and emergency conditions and, if a weight and center of gravity combination is considered safe only within certain loading limits, those load limits and the corresponding weight and center of gravity combinations;
  - iii. with respect to each flight phase and mode of operation, the minimum and maximum altitudes and velocities within which the aircraft can be operated safely under normal and emergency conditions;
  - iv. a description of the effects of foreseeable weather conditions or other environmental conditions on the performance of both the system and the UA;
  - v. the characteristics of the system that could result in severe injury to crew members during normal operations;
  - vi. the design features of the system and their associated operations that are intended to protect against injury to persons not involved in the operations;
  - vii. the warning information provided to the remote pilot in the event of a degradation in system performance that results in an unsafe system operating condition;
  - viii. procedures for operating the system in normal and emergency conditions; and
  - ix. assembly and adjustment instructions for the system.
- c. Manufacturer that has made a declaration to the CAAB in respect of a model of a UAS under section shall keep, and make available to the CAAB on request:
- i. a current record of all mandatory actions in respect of the system; and
  - ii. a current record of the results of and the reports related to the verifications that the manufacturer has undertaken to ensure that the model of the system meets the technical requirements applicable to the operations for which the declaration was made.
  - iii. The manufacturer shall keep the records for the greater of:
    - a) two years following the date that manufacturing of that model of UAS permanently ceases,
    - b) the lifetime of the UAS

## 945.6 - Obligations of manufacturers for commercial production

1. While manufacturing drone, regulations mentioned in "Drone Registration & Flying Regulation, 2020" shall be applied.
2. Manufacturers shall ensure that procedures are in place for series production to remain notified. Changes in product design, characteristics or software, and changes in the harmonised standards

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or in technical specifications by reference to which conformity of a product is declared shall be adequately taken into account.

3. When deemed appropriate with regard to the risks presented by a product, manufacturers shall, to protect the health and safety of consumers, carry out sample testing of marketed products, investigate, and, if necessary, keep a register of complaints, of non-conforming products and product recalls and shall keep distributors informed of any such monitoring.
4. Manufacturers of UAS shall ensure that the UA bears a type, a unique serial number allowing for its identification, Manufacturers shall indicate on the product their name, registered trade name or registered trademark, website address and the postal address at which they can be contacted or, where that is not possible, on its packaging, or in a document accompanying it. The address shall indicate a single point at which the manufacturer can be contacted. The contact details shall be indicated in a language easily understood by end-users and market surveillance authorities.
5. Manufacturers shall ensure that the product is accompanied by the manufacturers' instructions and information notice required in a language which can be easily understood by consumers and other end users, such manufacturers' instructions and information notice, as well as any labelling, shall be clear, understandable and legible.
6. Export of locally manufactured UAS required Flight testing clearance. Manufacturer of Exported UAS shall comply with the regulation of the country of use.


### **945.17 - Technical documentation**

The manufacturer shall establish the technical documentation. The documentation shall make it possible to assess the product's conformity to the applicable requirements. The technical documentation shall, wherever applicable, contain at least the following elements:

1. a complete description of the product including;
2. photographs or illustrations showing its external features, markings and internal layout;
3. the versions of any software or firmware involved in compliance with the requirements set by this Regulation;
4. manufacturer's and installation instructions;
5. conceptual design and manufacturing drawings and schemes of components, sub-assemblies, circuits and other relevant similar elements;
6. descriptions and explanations necessary for the understanding of those drawings and schemes and the operation of the product;
7. results of design calculations made, examinations carried out, and other relevant similar elements;
8. test reports;

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9. the supporting evidence for the adequacy of the technical design solution. This supporting evidence shall mention any documents that have been used, in particular where the relevant harmonised standards and/or technical specifications have not been applied in full. The supporting evidence shall include, where necessary, the results of tests carried out by the appropriate laboratory of the manufacturer, or by another testing laboratory on his behalf and under his responsibility;
10. The technical documentation shall be drawn up before the product is placed on the market and shall be continuously updated


### **945.38 – Compliant product presents a risk**

1. Where the CAAB have sufficient reason to believe that a product presents a risk to the health or safety of persons or to other aspects of public interest protection covered by this Chapter, shall carry out an evaluation in relation to the product concerned. The relevant operators shall cooperate as necessary for that purpose, they shall, without delay to take all appropriate corrective actions to bring the product into compliance with those requirements or to withdraw the product from the market, or to recall it within a reasonable period, commensurate with the nature of the risk, as they may prescribe.
2. The information shall include all available details, in particular the data necessary for the identification of the non-compliant product, the origin of the product, the nature of the non-compliance alleged and the risk involved, the nature and duration of the measures taken and the arguments put forward by the relevant operator.

### **945.40 - Requirements for UAS operated in the ‘Certified’ categories**

1. The design, production and maintenance of UAS shall be certified if the UAS meets any of the following conditions:
  - a. it is designed for transporting people
  - b. it is designed for the purpose of transporting dangerous goods and requiring a high level of robustness to mitigate the risks for third parties in case of accident;
  - c. it is intended to be used in the ‘Certified’ category of operations defined in UAS.ANO.6 and in the operational authorisation to be issued by CAAB, following a risk assessment provided for in UAS.ANO.11, considers that the risk of the operation cannot be adequately mitigated without the certification of the UAS.
2. Unless it needs to be certified in accordance with paragraph 1, a UAS used in the ‘Certified’ category shall feature the technical capabilities set out in the operational authorisation issued by CAAB or as defined by the UAS Operator Certificate (ROC) pursuant to Part C of the ANO.
3. UAS subject to registration according to UAS.ANO.14 shall have a unique serial number compliant.

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4. Each UA intended to be operated in the ‘Certified’ category and at a height below 120 meters shall be equipped with a remote identification system that allows:
- a. the upload of the UAS operator registration number required in accordance with UAS.ANO.14 and any additional number Provided by the registration system
  - b. The system shall perform a consistency check verifying the integrity of the full string provided to the UAS operator at the time of registration. In case of inconsistency, the UAS shall emit an error message to the UAS operator;
  - c. the periodic transmission of at least the following data, in real time during the whole duration of the flight, in a way that it can be received by existing mobile devices;
  - d. the UAS operator registration number;
  - e. the unique serial number of the UA compliant with paragraph 4 or, if the UA is privately built, the unique serial number of the add on, as specified in Part 6 of the ANO;
  - f. the time stamp, the geographical position of the UA and its height above the surface or take-off point;
  - g. the route course measured clockwise from true north and ground speed of the UA;
  - h. the geographical position of the remote pilot;
  - i. an indication of the emergency status of the UAS.
  - j. to reduce the ability of tampering the functionality of the direct remote identification system.
5. Certified UAS to be complied with certification of Airworthiness of Aircraft’ if the indeed operation is to carry passenger.

#### **945.41 - UAS operators excludes from Bangladeshi Citizen**

1. UAS operators that have their principal place of business, are established, or reside in a third country, shall comply with the "Drone Registration & Flying Regulation, 2020" policy.
2. Third country UAS operator seeks for special flight authorization
3. A certificate of the remote pilot competency or UAS operator or an equivalent document, may be recognized by CAAB for the purpose of operation that:
  - a. the third country asked for such recognition;
  - b. the certificate of the remote pilot competency or the UAS operator’s certificate are valid documents of the State of issue

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## 945.42-Direct Remote Identifications


A direct remote identification add-on shall be installed with the following:

1. aircraft weighs more than 5 kg must be installed with ADS-B/C receivers or dedicated GPS transmitter. A waiver may be given in case such drones are used for only agricultural purpose.
2. allow the upload of the UAS operator registration number required in accordance with UAS.ANO.14;
3. ensure, in real time during the whole duration of the flight, the direct periodic broadcast from the UA using an open and documented transmission protocol, in a way that it can be received directly by existing mobile devices within the broadcasting range, of at least the following data ensures that the user cannot modify the data mentioned.
  - a. the UAS operator registration number;
  - b. the unique physical serial number of the UA compliant with standard ANSI/CTA-2063;
  - c. the geographical position of the UA and its height above the surface or take-off point;
  - d. the route course measured clockwise from true north and ground speed of the UA; and
  - e. the geographical position of the remote pilot;
  - f. UAS Operations except category A shall submit trajectory/flight/GPS data as required by CAAB;
4. be placed on the market with manufacturer's instructions providing the reference of the transmission protocol used for the direct remote identification emission and the instruction to:
  - a. install the module on the UA; and
  - b. upload the UAS operator registration number.

## 945.43 –Obligations for locally assembled/ fabricated UAS

1. Locally assembled/ fabricated UAS from imported components need to be registered under Model Aircraft.
2. Flight testing will be allowed only CAAB designated facilities/ geographical zones or permission to be taken from CAAB before testing such UAS.
3. UAS can be flown under 947.3, 947.4 & 947.5 accordingly in regards to the approval from CAAB after defined hours of flight testing.

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### **945.45–UAS Maintenance Organization**

1. Any organization whose intended purpose is to maintain, flight testing of any UAS/Drone require Remote Operator Certificate.
2. The person who intended to test fly of any assembled, or after maintenance or repair drone require Remote Pilot License

## PART A — UAS OPERATIONS IN THE ‘OPEN’ CATEGORY


### UAS.A.010 General Provisions

1. The category of UAS ‘Open’ operations is divided into two subcategories A1, and A2, on the basis of operational limitations, requirements for the remote pilot and technical requirements for UAS;
2. Where the UAS operation involves the flight of the unmanned aircraft starting from a natural elevation in the terrain or over terrain with natural elevations, the unmanned aircraft shall be maintained within 100 feet from the closest point of the surface of the earth. The measurement of distances shall be adapted accordingly to the geographical characteristics of the terrain, such as plains, hills, mountains;
3. When flying an unmanned aircraft within a horizontal distance of 150 feet from an artificial obstacle taller than 100 feet, the maximum height of the UAS operation may be increased up to 50 feet above the height of the obstacle;
4. UAS 249 gm or over and controller range over 100 meter must be registered
5. UAS must be flown within VLOS and 100 feet for closest point of the earth and avoiding any obstacle;
6. Flight authorization is required to fly above 100 feet in respect of various geographical zones.
7. By way of derogation from point (2), unmanned sailplanes with a MTOM, including payload, of less than 10 kg, may be flown at a distance in excess of 120 metres from the closest point of the surface of the earth, provided that the unmanned sailplane is not flown at a height greater than 120 metres above the remote pilot at any time.

### GM1 UAS.A.010(1) General Provisions

The “A” category includes two subcategories **A1 and A2** with operational limitations. In relation to the type of subcategories of belonging, it is therefore possible to fly near people but always in **VLOS**, but not on gatherings of people without their consent. The table then provides the criteria and limitations for each category, as well as the requirements that must be met.

Sub-Cat		Type of operation	Training Required	Technical Requirements	Operator Registration	Minimum age
A1- Flight over people not involved	<249 gm	Flight over people not involved in the operations	None	N/A	No	No
		Flight prohibited on gatherings of people		User manual, Max horizontal speed 30 kph		
		With follow me mode- max distance flight from 30 meter or 100 ft from the operator				

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A2- Flight close to people	249 gm> 5Kg	Flight prohibited on gatherings of people without their concern, Min distance 30 m or 100 ft from the people not involves with flying	None	User manual, CAAB information, max horizontal speed 30 kph, selectable altitude limits, lights, data link loss management, low battery warning	Required	16 years
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## GM1 UAS.A.010(7) General Provisions

### Maximum Height

The remote pilot must ensure that he or she keeps the unmanned aircraft (UA) at a distance less than 100 feet from the terrain. Aligned with a defined geographical zone with a lower maximum height, the remote pilot must ensure that the UA always complies with the requirements of the respective geographical zone.

The entity responsible for the artificial obstacle referred to in point UAS.A.010(3) needs to explicitly grant the unmanned aircraft system (UAS) operator permission to conduct an operation close to a tall man-made obstacle, e.g. a building, or antenna. No UAS operator shall conduct an operation close to such an obstacle without permission from the entity responsible for the obstacle.

## GM1 UAS.A.010(7) General Provisions

### OPERATIONS WITH UNMANNED SAILPLANES

This derogation was included to allow model gliders to continue to operate along slopes. Strictly applying the 120-metre distance from the closest point of the surface of the earth would have had disproportionate consequences. These operations have been conducted successfully for decades and have generated a micro-economy in certain countries. Two measures have been put in place to reduce the risk:


1. A maximum takeoff mass (MTOM), including the payload, limited to 10 kg to reduce the consequences of an impact. 10 kg should cover the vast majority of gliders in operation.
2. The maximum height above the remote pilot is limited to 120 m, which reduces the air risk.

## UAS.A.020 UAS operations in subcategory A1

UAS operations in subcategory A1 shall comply with all the following conditions:

1. for unmanned aircraft flight to be conducted in such a way that a remote pilot of the unmanned aircraft does not overfly assemblies of people and reasonably expects that no uninvolved person will be overflown. In the event of unexpected overflight of uninvolved persons, the remote pilot shall reduce as much as possible the time during which the unmanned aircraft overflies those persons;
2. in the case of an unmanned aircraft flight to be conducted in such a way that the remote pilot of the unmanned aircraft may overfly uninvolved persons, but shall never overfly assemblies of people without their consent;
3. be performed with an unmanned aircraft that:

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- a. has an MTOM, including payload, of less than 250 g and a maximum operating speed of less than 8 m/s (30 kph), in the case of a privately built UAS; or
  - b. the control of aircraft has range below 100 feet.
4. basic level of flight operation is expected but examination or assessment is not required to fly in A1 category.

### AMC1 UAS. A.020 (1) and (2) UAS operations in subcategory A1

#### **OPERATIONAL LIMITATIONS IN SUBCATEGORY A1**

As a principle, the rules prohibit overflying assemblies of people without their consent. Overflying isolated people is possible with UAS MTOMs of less than 249 gm.


1. before starting the UAS operation, the remote pilot shall assess the area and shall reasonably expect that no uninvolved person will be overflown. This evaluation shall be made taking into account the configuration of the site of operation (e.g. the existence of roads, streets, pedestrian or bicycle paths), and the possibility to secure the site and the time of the day. In case of an unexpected overflight, the remote pilot shall reduce as much as possible the duration of the overflight, for example, by flying the UAS in such a way that the distance between the UA and the uninvolved people increases, or by positioning the UAS over a place where there are no uninvolved people.
2. It is accepted that UAS with MTOMs less than 250 gm may fly over uninvolved people; however, this shall be avoided whenever possible, and where it is unavoidable, extreme caution shall be used.

### UAS.A.030 UAS operations in subcategory A2

UAS operations in subcategory A2 shall comply with all of the following conditions:

1. be conducted in such a way that the unmanned aircraft does not overfly uninvolved persons and the UAS operations take place at a safe distance of at least 100 feet from them; the remote pilot may reduce the horizontal safety distance down to a minimum of 15 feet from an uninvolved person when operating an unmanned aircraft with an active low speed mode function and after evaluation of the situation regarding:
  - a. weather conditions
  - b. performance of the unmanned aircraft,
  - c. segregation of the overflown area.
2. be performed by a remote pilot who is familiar with manufacturer's instructions provided by the manufacturer of the UAS and holds a certificate of remote pilot license issued by CAAB or any other CAA (Civil Aviation Authority).

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## AMC1 UAS.A.030 (1) UAS operations in subcategory A2

### SAFE DISTANCE FROM UNINVOLVED PERSONS

1. The minimum horizontal distance of the UA from uninvolved persons shall be defined as the distance between the points where the UA would hit the ground in the event of a vertical fall and the position of the uninvolved persons.
2. As a reference, when the UA is operating in close proximity to people, the remote pilot shall keep the UA at a lateral distance from any uninvolved person that is not shorter than the height ('1:1 rule', i.e. if the UA is flying at a height of 100 feet, the distance from any uninvolved person shall be at least 30 m).
3. In any case, the distance from uninvolved persons shall always be greater than:
  - a. 5 m, when the low-speed mode function on the UA is activated and set to 3 m per second
  - b. 5 m, when operating a UAS balloon or airship; or
  - c. 30 m in all other cases.

## GM1 UAS.A.030(1) UAS operations in subcategory A2

### SAFE DISTANCE FROM UNINVOLVED PERSONS

The safe distance of the UA from uninvolved persons is variable and is heavily dependent on the performance and characteristics of the UAS involved, the weather conditions and the segregation of the overflow area. The remote pilot is ultimately responsible for the determination of this distance.

### Operating Limitations for UAS

These operating limitations are intended, among other things, to support the remote pilot's ability to identify hazardous conditions relating to encroaching aircraft or persons on the ground, and to take the appropriate actions to maintain safety

### Remote Pilot Competencies Required To Obtain a Certificate of Remote Pilot Competency

A remote pilot may obtain the knowledge needed to pass the exam for a certificate of remote pilot competency in one of the following two ways:


1. Competency-based training
  - a. Competency-based training covers aspects related to non-technical skills in an integrated manner, taking into account the particular risks associated with UAS operations

Competency-based training should be developed using the analysis, design, development, implementation, evaluation (ADDIE) principles.

2. Self-study

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- a. A remote pilot may undertake self-study in many ways in order to obtain a certificate of competency. The purpose of this self-study is to acquire some basic competency and familiarise themselves with the UA, as well as with the UAS operations they want to conduct
- b. Examples of self-study:
  - i. reading the manual or leaflet provided by the UA manufacturer;
  - ii. reading related information or watching instructional films; and
  - iii. obtaining information from others who have already experience in flying a UA.

The remote pilot may also undertake this study as classroom training, e-learning or similar training at a training facility.

### UAS.A.060 Responsibilities of the remote pilot

1. Before starting an UAS operation, the remote pilot shall:
  - a. have the appropriate competency in the subcategory of the intended UAS operations in accordance with points UAS.A.020, UAS.A.030 or UAS.A.040 to perform its task and carry a proof of competency while operating the UAS
  - b. obtain updated information relevant to the intended UAS operation about any geographical zone published by CAAB in accordance with UAS.ANO.15;
  - c. observe the operating environment, check the presence of obstacles and, unless operating in subcategory A1 with an unmanned aircraft, check the presence of any uninvolved person;
  - d. ensure that the UAS is in a condition to safely complete the intended flight, and if applicable, check if the direct remote identification is active and up-to-date;
  - e. if the UAS is fitted with an additional payload, verify that its mass does not exceed neither the MTOM defined by the manufacturer or the MTOM limit of its class.
2. During the flight, the remote pilot shall:
  - a. not perform duties under the influence of psychoactive substances or alcohol or when it is unfit to perform its tasks due to injury, fatigue, medication, sickness or other causes
  - b. keep the unmanned aircraft in VLOS and maintain a thorough visual scan of the airspace surrounding the unmanned aircraft in order to avoid any risk of collision with any manned aircraft. The remote pilot shall discontinue the flight if the operation poses a risk to other aircraft, people, animals, environment or property;
  - c. comply with the operational limitations in geographical zones defined in accordance with UAS.ANO.15;

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- d. have the ability to maintain control of the unmanned aircraft, except in the case of a lost link or when operating a free-flight unmanned aircraft;
  - e. operate the UAS in accordance with manufacturer’s instructions provided by the manufacturer, including any applicable limitations;
  - f. comply with the operator’s procedures when available;
  - g. when operating at night (with dew exemption), ensure that a green flashing light on the unmanned aircraft is activated.
3. During the flight, remote pilots and UAS operators shall not fly close to or inside areas where an emergency response effort is ongoing unless they have permission to do so from the responsible emergency response services;
  4. For the purposes of point (2)(b), remote pilots may be assisted by an unmanned aircraft observer. In such case, clear and effective communication shall be established between the remote pilot and the unmanned aircraft observer.

**GM1 UAS.A.060(1)(b) Responsibilities of the remote pilot**

**OBTAINING UPDATED INFORMATION ABOUT ANY FLIGHT RESTRICTIONS OR CONDITIONS PUBLISHED BY CAAB**

Information on airspace structure and limitations, including limited zones for UA or no-UA zones, will be provided in accordance with UAS.ANO.15 of the UAS Regulation.


**AMC1 UAS.A.060 (1)(c) Responsibilities of the remote pilot**

**OPERATING ENVIRONMENT**

1. The remote pilot shall observe the operating environment and check any conditions that might affect the UAS operation, such as the locations of people, property, vehicles, public roads, obstacles, aerodromes, critical infrastructure, and any other elements that may pose a risk to the safety of the UAS operation;
2. Familiarisation with the environment and obstacles shall be conducted, when possible, by walking around the area where the operation is intended to be performed;
3. It shall be verified that the weather conditions at the time when the operation starts and those that are expected for the entire period of the operation are compatible with those defined in the manufacturer’s manual.
4. The remote pilot shall be familiar with the operating environment and the light conditions, and make a reasonable effort to identify potential sources of electromagnetic energy, which may cause undesirable effects, such as electromagnetic interference (EMI) or physical damage to the operational equipment of the UAS.

**AMC1 UAS.A.060 (1)(d) Responsibilities of the remote pilot**

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## UAS IN A SAFE CONDITION TO COMPLETE THE INTENDED FLIGHT

The remote pilot shall:

1. update the UAS with data for the geo-awareness function if it is available on the UA;
2. ensure that the UAS is fit to fly and complies with the instructions and limitations provided by the manufacturer, or the best practice in the case of a privately built UAS;
3. ensure that any payload carried is properly secured and installed and that it respects the limits for the mass and CG of the UA;
4. ensure that the charge of the battery of the UA is enough for the intended operation based on:
5. the planned operation; and
6. the need for extra energy in case of unpredictable events; and
7. for UAS equipped with a loss-of-data-link recovery function, ensure that the recovery function allows a safe recovery of the UAS for the envisaged operation; for programmable loss-of-datalink recovery functions, the remote pilot may have to set up the parameters of this function to adapt it to the envisaged operation.

### GM1 UAS.A.060(2)(a) and UAS.SPECIFIC.060(1)(a) Responsibilities of the remote pilot

#### OTHER CAUSES

‘Other causes’ means any physical or mental disorder or any functional limitation of a sensory organ that would prevent the remote pilot from performing the operation safely.


### AMC1 UAS.A.060(2)(b) Responsibilities of the remote pilot

#### VLOS RANGE

1. The maximum distance of the UA from the remote pilot shall depend on the size of the UA and on the environmental characteristics of the area (such as the visibility, presence of tall obstacles, etc.);
2. The remote pilot shall keep the UA at a distance such that they are always able to clearly see it and evaluate the distance of the UA from other obstacles. If the operation takes place in an area where there are no obstacles and the remote pilot has unobstructed visibility up to the horizon, the UA can be flown up to a distance such that the UA remain clearly visible. If there are obstacles, the distance shall be reduced such that the remote pilot is able to evaluate the relative distance of the UA from that obstacle. Moreover, the UA shall be kept low enough so that it is essentially ‘shielded’ by the obstacle, since manned aircraft normally fly higher than obstacles.

### GM1 UAS.A.060(2)(b) Responsibilities of the remote pilot

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## **DISCONTINUATION OF THE FLIGHT IF THE OPERATION POSES A RISK TO OTHER AIRCRAFT**

The rules put an obligation on the remote pilot to maintain a thorough visual scan of the airspace to avoid any risk of a collision with manned aircraft. This means that the remote pilot is primarily responsible for avoiding collisions. The reason is that the manned aircraft pilot(s) may not be able to see the UA due to its small size. Therefore, the remote pilot shall make an evaluation of the risk of collision and take appropriate action.

As soon as the remote pilot sees another aircraft or a parachute or any other airspace user, they must immediately keep the UA at a safe distance from it and land if the UA is on a trajectory towards the other object.

For example, if the remote pilot sees a manned aircraft flying at high altitude (i.e. an en route flight at a height of 4000 ft or more), since the pilot will always keep the UA below 100 ft (whatever the height previously cleared), they can continue the operation.

If the remote pilot observes an aircraft passing through the sky at a low altitude, at which it may interact with the UA, they need to immediately reduce the height of the UA (e.g. to less than 50 ft above the ground) and keep the UA in an area that is far (not less than 500m) from the other aircraft. If they cannot ensure such a distance, the UA needs to be immediately landed.

### **AMC1 UAS.A.060(2)(d) Responsibilities of the remote pilot**

#### **ABILITY TO MAINTAIN CONTROL OF THE UA**

1. The remote pilot shall:
  - a. be focused on the operation of the UA, as appropriate
  - b. not operate a UA while operating a moving vehicle at a speed more than 20 kph; and
  - c. operate only one UA at a time.
2. If the remote pilot operates a UA from a moving ground vehicle or boat, the speed of the vehicle shall be slow enough for the remote pilot to maintain a VLOS of the UA, maintain control of the UA at all times and maintain situational awareness and orientation.


### **GM1 UAS.A.060(2)(d) Responsibilities of the remote pilot**

#### **ABILITY TO MAINTAIN CONTROL OF THE UA**

Autonomous operations are not allowed in the ‘Open’ category, and the remote pilot must be able to take control of the UA at any time, except in the event of a lost-link condition or a free-flight UA.

### **GM2 UAS.A.060(2)(d) Responsibilities of the remote pilot**

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## **FREE-FLIGHT UA**

‘Free flight’ means performing flights with no external control, taking advantage of the ascending currents, dynamic winds and the performance of the model. Outdoor free flights are carried out with gliders or with models equipped with means of propulsion (e.g. rubber-bands, thermal engines) that raise them in altitude, before they freely glide and follow the air masses.

## **GM1 UAS.A.060(3) and UAS.SPECIFIC.060(3)(e) Responsibilities of the remote pilot**

### **EMERGENCY RESPONSE DEFINITION**

‘Emergency response’ is an action taken in response to an unexpected and dangerous event in an attempt to mitigate its impact on people, property or the environment.

## **GM2 UAS.A.060(3) and UAS.SPECIFIC.060(3) Responsibilities of the remote pilot**

### **EMERGENCY RESPONSE EFFORT**

When there is an emergency response effort taking place in the operational area of a UAS, the UAS operation shall be immediately discontinued unless it was explicitly authorised by the responsible emergency response services. Otherwise, a safe distance must be maintained between the UA and the emergency response site so that the UA does not interfere with, or endanger, the activities of the emergency response services. The UAS operator shall take particular care to not hinder possible aerial support and to protect the privacy rights of persons involved in the emergency event.


## **GM1 UAS.A.060(4) Responsibilities of the remote pilot**

### **ROLE OF THE UA / Visual OBSERVER AND FIRST PERSON VIEW**


1. The remote pilot may be assisted by a UA observer helping them to keep the UA away from obstacles. The UA observer must be situated alongside the remote pilot in order to provide warnings to the remote pilot by supporting them in maintaining the required separation between the UA and any obstacle, including other air traffic.
2. UA observers may also be used when the remote pilot conducts UAS operations in first-person view (FPV), which is a method used to control the UA with the aid of a visual system connected to the camera of the UA. In any case, including during FPV operations, the remote pilot is still responsible for the safety of the flight.
3. As the UA observer is situated alongside the remote pilot and they must not use aided vision (e.g. binoculars), their purpose is not to extend the range of the UA beyond the VLOS distance from the remote pilot. Exceptions are emergency situations, for instance, if the pilot must perform an emergency landing far from the pilot’s position, and binoculars can assist the pilot in safely performing such a landing.

## **UAS.A.070 Duration and validity of the remote pilot online theoretical competency and certificates of remote pilot competency**

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1. The remote pilot online theoretical competency, required by points (4)(b) of point (3) of point UAS.A.040, shall be valid for five years.
2. The revalidation of the remote pilot online theoretical competency and of the certificate of remote pilot competency is, within its validity period, subject to:
  - a. demonstration of competencies respectively in accordance with point (4)(b) of point UAS.A.020; or
  - b. the completion of a refresher training addressing respectively the theoretical knowledge subjects as defined in point (4)(b) of point UAS.A.020 or point (2) of point UAS.A.030 provided by CAAB or by an entity designated by the CAAB.
3. In order to revalidate the remote pilot online theoretical competency or the certificate of remote pilot competency upon its expiration, the remote pilot shall comply with point (2)(a).

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## PART B — UAS OPERATIONS IN THE SPECIFIC CATEGORY

### UAS.SPECIFIC.010 General provisions

The UAS operator shall provide CAAB with an operational risk assessment for the intended operation in accordance with UAS.ANO.11, or submit a declaration when point UAS.SPECIFIC.020 is applicable, unless the operator holds a UAS operator certificate (ROC) with the appropriate privileges, in accordance with Part C of this ANO. The UAS operator shall regularly evaluate the adequacy of the mitigation measures taken and update them where necessary.


### GM1 SPECIFIC.010 General provision

In terms of differences between drone category, SPECIFIC Operations shall be done by ‘B’ & ‘C’ category drones.

### UAS.SPECIFIC.020 Operational declaration

1. In accordance with UAS.ANO.5, the UAS operator may submit an operational declaration of compliance to CAAB as an alternative to points UAS.SPECIFIC.030 and UAS.SPECIFIC.040 in relation to operations:
  - a. of unmanned aircraft with
    - i. VLOS over controlled ground area except over assemblies of people
    - ii. VLOS except over assemblies of people;
    - iii. BVLOS over sparsely populated areas;
    - iv. BVLOS over controlled ground area.
  - b. performed below 100 feet from the closest point of the surface of the earth, and
    - i. in uncontrolled airspace unless different limitations are provided by CAAB through UAS geographical zones in areas where the probability of encountering manned aircraft is not low; or
    - ii. in controlled airspace, in accordance with published procedures for the area of operation, so that a low probability of encountering manned aircraft is ensured.
2. A declaration of UAS operators shall contain:
  - a. administrative information about the UAS operator
  - b. a statement that the operation satisfies the operational requirement set out in point (1);
  - c. the commitment of the UAS operator to comply with the relevant mitigation measures required for the safety of the operation, including the associated instructions for the operation, for the design of the unmanned aircraft and the competency of involved personnel;

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- d. confirmation by the UAS operator that an appropriate insurance cover will be in place for every flight made under the declaration, if required by Union or national law.
3. Upon receipt of the declaration, CAAB shall verify that the declaration contains all the elements listed in point (2) and shall provide the UAS operator with a confirmation of receipt and completeness without undue delay;
4. After receiving the confirmation and completeness, the UAS operator is entitled to start the operation;
5. UAS operators shall notify, without any delay, CAAB of any change to the information contained in the operational declaration that they submitted;
6. UAS operators holding an ROC with appropriate privileges, in accordance with Part C of this ANO, are not required to submit the declaration;


### UAS.SPECIFIC.030 Application for an operational authorisation

1. Before starting an UAS operation in the SPECIFIC category the UAS operator shall obtain an operational authorisation from CAAB, except:
  - a. when point UAS. SPECIFIC.020 is applicable; or
  - b. the UAS operator holds an ROC with the appropriate privileges, in accordance with Part C of this ANO.
2. The UAS operator shall submit an application for an updated operational authorisation if there are any significant changes to the operation or to the mitigation measures listed in the operational authorisation.
3. The application for an operational authorisation shall be based on the risk assessment referred to in UAS.ANO.11 and shall include in addition the following information:
  - a. the registration number of the UAS operator;
  - b. the name of the accountable manager or the name of the UAS operator in the case of a natural person;
  - c. the operational risk assessment;
  - d. the list of mitigation measures proposed by the UAS operator, with sufficient information for CAAB to assess the adequacy of the mitigation means to address the risks;
  - e. an operations manual when required by the risk and complexity of the operation;
  - f. a confirmation that an appropriate insurance cover will be in place at the start of the UAS operations, if required by Union or national law.

### AMC1 UAS.SPECIFIC.030 (2) Application for an operational authorisation

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The UAS operator shall submit an application according to the form in Appendix F. The application and all the documentation referred to or attached shall be stored for at least one year in a manner that ensures their protection from unauthorised access, damage, alteration, and theft.

### **GM1 UAS.SPECIFIC.030(2) Application for an operational authorisation**

Depending on the level of the risk of the operation, the technical characteristics of the UAS may play an important role in mitigating the risk. In that case, the UAS operator provide additional information on the characteristics of the UAS to be operated. CAAB may, ask for additional data if required.

### **AMC1 UAS.SPECIFIC.030(3)(e) Application for an operational authorisation**

Operations manual contents is required in according to Appendix F

### **AMC1 UAS.SPECIFIC.030(3)(e) Application for an operational authorisation**

Operations manual contents is required in according to Appendix F

### **UAS.SPECIFIC.40 Issuing of an operational authorisation**


1. When receiving an application in accordance with point UAS. SPECIFIC.030, CAAB shall issue, without undue delay, an operational authorisation in accordance with UAS.ANO.12 when it concludes that the operation meets the following conditions:
  - a. all information in accordance with point (3) of point UAS. SPECIFIC.030 is provided
  - b. a procedure is in place for coordination with the relevant service provider for the airspace if the entire operation, or part of it, is to be conducted in controlled airspace.
  - c. NOC from “section 9 of the drone Registration and flight permission, 2020” are met.
2. CAAB shall specify in the operational authorisation the exact scope of the authorisation in accordance with UAS.ANO.12.

### **UAS.SPECIFIC.050 Responsibilities of the UAS operator**

The UAS operator shall comply with all of the following:


1. establish procedures and limitations adapted to the type of the intended operation and the risk involved, including:
  - a. operational procedures to ensure the safety of the operations
  - b. procedures to ensure that security requirements applicable to the area of operations are complied with in the intended operation;

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- c. measures to protect against unlawful interference and unauthorised access;
  - d. procedures to ensure that all operations are in respect of Regulation;
  - e. Guidelines for its remote pilots to plan UAS operations in a manner that minimises nuisances, including noise and other emissions-related nuisances, to people and animals.
2. designate a remote pilot for each flight or, in the case of autonomous operations, ensure that during all phases of the flight, responsibilities and tasks especially those defined in points (2) and (3) of point UAS.SPECIFIC.060 are properly allocated in accordance with the procedures established pursuant to point (a);
  3. ensure that all operations effectively use and support the efficient use of radio spectrum in order to avoid harmful interference;
  4. ensure that before conducting operations, remote pilots comply with all of the following conditions:
    - a. have the competency to perform their tasks in line with the applicable training identified by the operational authorisation or, if point UAS.SPECIFIC.020 applies, by the conditions and limitations defined by the ROC
    - b. follow remote pilot training which shall be competency based and include the competencies set out in paragraph 2 of UAS.ANO.8:
    - c. follow remote pilot training, as defined in the operational authorisation, for operations requiring such authorisation, it shall be conducted in cooperation with an entity designated by the competent authority;
    - d. follow remote pilot training for operations under declaration that shall be conducted in accordance with the mitigation measures defined by the standard scenario;
    - e. have been informed about the UAS operator’s operations manual, if required by the risk assessment and procedures established in accordance with point (a);
    - f. obtain updated information relevant to the intended operation about any geographical zones defined in accordance with UAS.ANO.15;
  5. ensure that personnel in charge of duties essential to the UAS operation, other than the remote pilot itself, comply with all of the following conditions:
    - a. have completed the on-the-job-training developed by the operator
    - b. have been informed about the UAS operator’s operations manual, if required by the risk assessment, and about the procedures established in accordance with point (a);
    - c. have obtained updated information relevant to the intended operation about any geographical zones defined in accordance with UAS.ANO.15;
  6. carry out each operation within the limitations, conditions, and mitigation measures defined in the declaration or specified in the operational authorisation;

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7. keep and maintain an up-to-date record of:
  - a. all the relevant qualifications and training courses completed by the remote pilot and the other personnel in charge of duties essential to the UAS operation and by the maintenance staff, for at least 3 years after those persons have ceased employment with the organisation or have changed their position in the organization
  - b. the maintenance activities conducted on the UAS for a minimum of 3 years;
  - c. the information on UAS operations, including any unusual technical or operational occurrences and other data as required by the declaration or by the operational authorisation for a minimum of 3 years;
8. use UAS which, as a minimum, are designed in such a manner that a possible failure will not lead the UAS to fly outside the operation volume or to cause a fatality. In addition, Man Machine interfaces shall be such to minimise the risk of pilot error and shall not cause unreasonable fatigue;
9. maintain the UAS in a suitable condition for safe operation by:
  - a. as a minimum, defining maintenance instructions and employing an adequately trained and qualified maintenance staff; and
  - b. complying with point UAS.SPECIFIC.100, if required;
  - c. using an unmanned aircraft which is designed to minimise noise and other emissions, taking into account the type of the intended operations and geographical areas where the aircraft noise and other emissions are of concern.
10. establish and keep an up-to-date list of the designated remote pilots for each flight;
11. establish and keep an up-to-date list of the maintenance staff employed by the operator to carry out maintenance activities; and
12. ensure that each individual unmanned aircraft is installed with:
  - a. at least one green flashing light for the purpose of visibility of the unmanned aircraft at night, an
  - b. an active and up-to-date remote identification system.

## AMC1 UAS.SPECIFIC.050(1) Responsibilities of the UAS operator

### OPERATIONAL PROCEDURES

1. The UAS operator shall develop procedures as required by the standard scenario (STS) or by the operational authorisation.
2. If a UAS operator employs more than one remote pilot, the UAS operator shall:

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- a. develop procedures for UAS operations in order to coordinate the activities between its employees; and
2. compile and maintain a list of their personnel and their assigned duties.
3. The UAS operator shall allocate functions and responsibilities in accordance with the level of autonomy of the UAS during the operation.

### AMC1 UAS.SPECIFIC.050(1)(a) Responsibilities of the UAS operator

#### **OPERATIONAL PROCEDURES**

The UAS operator shall develop operational procedures based on the manufacturer's recommendations, if available. When the UAS operator is required to develop an OM the procedures shall be included in that manual.

### GM1 UAS.SPECIFIC.050(1)(b) Responsibilities of the UAS operator

#### **LEVEL OF AUTONOMY AND GUIDELINES FOR HUMAN-AUTONOMY INTERACTION**

The concept of autonomy, its levels and human-autonomous system interactions are currently being discussed in various domains (not only in aviation), and no common understanding has yet been reached. Guidance will therefore be provided once this concept is mature and globally accepted.

Nevertheless, the risk assessment of autonomous operations shall ensure, as for any other operations, that the risk is mitigated to an acceptable level.

Besides, it is expected that autonomous operations or operations with a high level of autonomy will be subject to authorisation and will not be covered by STSs until enough experience is gained.

### GM1 UAS.SPECIFIC.050(1)(d) Responsibilities of the UAS operator

#### **THEORETICAL KNOWLEDGE SUBJECTS FOR REMOTE PILOT TRAINING FOR THE SPECIFIC CATEGORY**


1. The SPECIFIC category may cover a wide range of UAS operations with different levels of risk. The UAS operator is therefore required to identify the competency required for the remote pilot and all the personnel in charge of duties essential to the UAS operation, according to the outcome of the risk assessment.
2. UAS operator must ensure that the remote pilot has the competency defined in the STS. In all other cases, the UAS operator may propose to the CAAB, as part of the application, a theoretical knowledge training course for the remote pilot based on the elements listed in AMC1 UAS.A.020(4)(b) and in UAS.A.030(2), complemented by the following subjects:

### AMC1 UAS.SPECIFIC.050(1)(e)(ii) Responsibilities of the UAS operator

#### **INFORMATION ABOUT THE UAS OPERATOR'S MANUAL**

The UAS operator shall ensure that the personnel in charge of duties essential to the UAS operation apply the procedures contained in the operator's manual.

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## AMC1 UAS.SPECIFIC.050(1)(g) Responsibilities of the UAS operator


### LOGGING OF FLIGHT ACTIVITIES AND RECORD-KEEPING

1. An acceptable means to log and record the flight activities is to use a logbook, which may be electronic.
2. The information to be recorded shall be indicated in the declaration or in the operational authorisation, which may include the following:
  - a. the identification of the UAS (manufacturer, model/variant (e.g. serial number);  
NOTE: if the UAS is not subject to registration, the identification of the UAS may be done using the serial number of the UAS.
  - b. the date, time, and location of the take-off and landing;
  - c. the duration of each flight;
  - d. the total number of flight hours/cycles;
  - e. in the case of a remotely piloted operation, the name of the remote pilot responsible for the flight;
  - f. the activity performed (add the reference to the STS or the authorisation number, as applicable);
  - g. any significant incident or accident that occurred during the operation;
  - h. a completed pre-flight inspection;
  - i. any defects and rectifications;
  - j. any repairs and changes to the UAS configuration; and
  - k. the information required to comply with UAS. SPECIFIC.100.
3. Records shall be stored for 2 years in a manner that ensures their protection from unauthorised access, damage, alteration, and theft.
4. The logbook can be generated in one of the following formats: electronic or paper. If the paper format is used, it shall contain, in a single volume, all the pages needed to log the holder's flight time. When one volume is completed, a new one will be started based on the cumulative data from the previous one.

## UAS. SPECIFIC.060 Responsibilities of the remote pilot

1. The remote pilot shall:
  - a. not perform duties under the influence of psychoactive substances or alcohol or when it is unfit to perform its tasks due to injury, fatigue, medication, sickness or other causes;

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- b. have the appropriate remote pilot competency as defined in the operational authorisation, as defined by the ROC and carry a proof of competency while operating the UAS.
  - c. be familiar with manufacturer’s instructions provided by the manufacturer of the UAS.
2. Before starting an UAS operation, the remote pilot shall comply with all of the following:
  - a. obtain updated information relevant to the intended operation about any geographical zones defined in accordance with UAS.ANO.15;
  - b. ensure that the operating environment is compatible with the authorised or declared limitations and conditions;
  - c. ensure that the UAS is in a safe condition to complete the intended flight safely, and if applicable, check if the direct remote identification is active and up-to-date;
  - d. ensure that the information about the operation has been made available to the relevant air traffic service (ATS) unit, other airspace users and relevant stakeholders, as required by the operational authorisation or by the conditions published by the Member State for the geographical zone of operation in accordance with UAS.ANO.15.
3. During the flight, the remote pilot shall:
  - a. comply with the authorised or declared limitations and conditions;
  - b. avoid any risk of collision with any manned aircraft and discontinue a flight when continuing it may pose a risk to other aircraft, people, animals, environment or property;
  - c. comply with the operational limitations in geographical zones defined in accordance with UAS.ANO.15;
  - d. comply with the operator’s procedures;
  - e. not fly close to or inside areas where an emergency response effort is ongoing unless they have permission to do so from the responsible emergency response services.

**AMC1 UAS.SPECIFIC.060(2)(b) Responsibilities of the remote pilot**

**OPERATING ENVIRONMENT**

1. The remote pilot, or the UAS operator in the case of an autonomous operation, shall check any conditions that might affect the UAS operation, such as the locations of people, property, vehicles, public roads, obstacles, aerodromes, critical infrastructure, and any other elements that may pose a risk to the safety of the UAS operation.
2. Familiarisation with the environment and obstacles shall be conducted through a survey of the area where the operation is intended to be performed.
3. It shall be verified that the weather conditions at the time when the operation starts and those that are expected for the entire period of the operation are compatible with those defined in the manufacturer’s manual, as well as with the operational authorisation or declaration, as applicable.

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4. The remote pilot shall be familiar with the light conditions and make a reasonable effort to identify potential sources of electromagnetic energy, which may cause undesirable effects, such as EMI or physical damage to the operational equipment of the UAS.

### AMC1 UAS.SPECIFIC.060(2)(c) Responsibilities of the remote pilot

#### **THE UAS IS IN A SAFE CONDITION TO COMPLETE THE INTENDED FLIGHT**

The remote pilot, or the operator in the case of an autonomous operation, shall:

1. update the UAS with data for the geo-awareness function if one is available on the UA;
2. ensure that the UAS is fit to fly and complies with the instructions and limitations provided by the manufacturer;
3. ensure that any payload carried is properly secured and installed, respecting the limits for the mass and CG of the UA;
4. ensure that the UA has enough propulsion energy for the intended operation based on:
  - a. the planned operation; and
  - b. the need for extra energy in case of unpredictable events; and
5. for a UAS equipped with a loss-of-data-link recovery function, ensure that the recovery function allows a safe recovery of the UAS for the envisaged operation; for programmable loss-of-datalink recovery functions, the remote pilot may have to set up the parameters of this function to adapt it to the envisaged operation.

### UAS.SPECIFIC.070 Transferability of an operational authorisation

An operational authorisation is not transferable.


### UAS.SPECIFIC.080 Duration and validity of an operational authorisation

1. CAAB shall specify the duration of the operational authorisation in the authorisation itself.
2. Notwithstanding point (1), the operational authorisation remains valid as long as the UAS operator remains compliant with the relevant requirements of this Regulation and with the conditions defined in the operational authorisation.
3. Upon revocation or surrender of the operational authorisation the UAS operator shall provide an acknowledgment in digital format that must be returned to CAAB without delay.

### UAS.SPECIFIC.085 Duration and validity of an operational declaration

The operational declaration shall have a limited duration of 2 years. The declaration shall no longer be considered as complete within the meaning of point (4) of point UAS. SPECIFIC.020 if:

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1. during the oversight of the UAS operator, CAAB has found that the UAS operation is not conducted in accordance with the operational declaration;
2. the conditions of the UAS operation have changed to the extent that the operational declaration no longer complies with the applicable requirements of this Regulation;
3. CAAB is not granted access in accordance with point UAS. SPECIFIC.090.

### UAS.SPECIFIC.090 Access

For the purpose of demonstrating compliance with this Regulation, an UAS operator shall grant to any person, that is duly authorised by the competent authority, an access to any facility, UAS, document, records, data, procedures or to any other material relevant to its activity, which is subject to operational authorisation or operational declaration, regardless of whether or not its activity is contracted or subcontracted to another organisation.

### UAS.SPECIFIC.100 Use of certified equipment and unmanned aircraft

1. If the UAS operation is using an unmanned aircraft for which a certificate of airworthiness or a restricted certificate of airworthiness have been issued, or using certified equipment, the UAS operator shall record the operation or service time in accordance either with the instructions and procedures applicable to the certified equipment, or with the organisational approval or authorisation.
2. The UAS operator shall follow the instructions referred to in the unmanned aircraft certificate or equipment certificate, and also comply with any airworthiness or operational directives issued by the Agency.

### GM1 UAS.SPECIFIC.100 The use of certified equipment and certified unmanned aircraft


#### **GENERAL**

For the purposes of UAS.SPECIFIC.100, ‘certified equipment’ is considered to be any equipment for which the relevant design organisation has demonstrated compliance with the applicable certification specifications and received a form of recognition from CAAB that attests such compliance.

The use of certified equipment or certified UA in the SPECIFIC category of operation does not imply a transfer of the flight activities into the ‘certified’ category of operation. However, the use of certified equipment or certified UA in the SPECIFIC category shall be considered as a risk reduction and/or mitigation measure in the SORA.

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## **PART C — UAS OPERATOR CERTIFICATE (ROC)**

### **UAS.ROC.010 General requirements for an ROC**

1. A legal person is eligible to apply for an ROC under this Part.
2. An application for an ROC or for an amendment to an existing ROC shall be submitted to CAAB and shall contain all of the following information:
  1. a description of the UAS operator's management system, including its organisational structure and safety management system
  2. the name(s) of the responsible UAS operator's personnel, including the person responsible for authorising operations with UASs;
  3. a statement that all the documentation submitted to CAAB has been verified by the applicant and found to comply with the applicable requirements.
3. If the requirements of this Part are met, an ROC holder may be granted the privileges, in accordance with point UAS.ROC.060.

### **GM1 UAS.ROC.010 General requirements for an ROC**

#### **GENERAL**

UAS operators may decide to apply for authorisations or issue declarations, as applicable, for their operations, or apply for an ROC. An ROC holder is considered to be a UAS operator; therefore, they must register according to UAS.ANO.14 and can do it in parallel to the ROC application.


### **AMC1 UAS.ROC.010(2) General requirements for an ROC**

#### **APPLICATION FOR AN ROC**

The application shall include at least the following information:

1. Name and address of the applicant's principal place of business.
2. Statement that the application serves as a formal application for a ROC.
3. Statement that all the documentation submitted to CAAB has been verified by the applicant and found to comply with the applicable requirements.
4. Desired date for the operation to commence.
5. Signature of the applicant's accountable manager.
6. List of attachments that accompany the formal application:
  - a. name(s) of the responsible UAS operator's personnel, including the accountable manager, operations, maintenance and training managers, the safety manager and security manager, the person responsible for authorising operations with UASs

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- b. list of UASs to be operated;
- c. details of the method of control and supervision of operations to be used;
- d. identification of the operation specifications sought;
- e. OM and safety management manual (SMM). (Note: the OM and SMM may be combined under the ROC Manual);
- f. schedule of events in the process to gain the ROC certificate with appropriate events addressed and target dates;
- g. documents of purchase, leases, contracts or letters of intent;
- h. arrangements for the facilities and equipment required and available; and
- i. arrangements for crew and ground personnel training and qualification.

## UAS.ROC.020 Responsibilities of the ROC holder

The ROC holder shall:

1. comply with the requirements of points UAS. SPECIFIC.050 and UAS. SPECIFIC.060;
2. comply with the scope and privileges defined in the terms of approval;
3. establish and maintain a system for exercising operational control over any operation conducted under the terms of its ROC;
4. carry out an operational risk assessment of the intended operation in accordance with UAS.ANO.11 unless conducting an operation for which an operational declaration is sufficient according to point UAS. SPECIFIC.020,
5. keep records of the following items in a manner that ensures protection from damage, alteration and theft for a period at least 3 years for operations conducted using the privileges specified under point UAS.ROC.060:
  - a. the operational risk assessment, when required according to point (4), and its supporting documentation
  - b. mitigation measures taken; and
  - c. the qualifications and experience of personnel involved in the UAS operation, compliance monitoring and safety management;
6. keep personnel records referred to in point (5)(c) as long as the person works for the organisation and shall be retained until 3 years after the person has left the organisation.

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## AMC1 UAS.ROC.020(3) Responsibilities of the ROC holder

### **OPERATIONAL CONTROL**

The organisation and methods established by the ROC holder to exercise operational control within its organisation shall be included in the OM as an additional chapter in relation to the template provided in GM1 UAS. SPECIFIC.030(3)(e).

## GM1 UAS.ROC.020(3) Responsibilities of the ROC holder

### **OPERATIONAL CONTROL**

‘Operational control’ shall be understood as the responsibility for the initiation, continuation, termination or diversion of a flight in the interest of safety.

‘System’ in relation to operational control shall be understood as the organisation, methods, documentation, personnel and training of those personnel for the initiation, continuation, termination or diversion of a flight in the interest of safety.

## AMC1 UAS.ROC.020(5) Responsibilities of the ROC holder


### **RECORD-KEEPING — GENERAL**

The record-keeping system shall ensure that all records are stored in a manner that ensures their protection from damage, alteration and theft. They shall be accessible on request of the CAAB, whenever needed within a reasonable time. These records shall be organised in a way that ensures traceability, availability and retrievability throughout the required retention period. The retention period starts when the record was created or last amended. Adequate backups shall be ensured.

## UAS.ROC.030 Safety management system

1. An UAS operator who applies for an ROC shall establish, implement and maintain a safety management system corresponding to the size of the organisation, to the nature and complexity of its activities, taking into account the hazards and associated risks inherent in these activities.
2. The UAS operator shall comply with all of the following:
  - a. nominate an accountable manager with authority for ensuring that within the organisation all activities are performed in accordance with the applicable standards and that the organisation is continuously in compliance with the requirements of the management system and the procedures identified in the ROC manual referred to in point UAS.ROC.040
  - b. define clear lines of responsibility and accountability throughout the organisation;
  - c. establish and maintain a safety policy and related corresponding safety objectives;
  - d. appoint key safety personnel to execute the safety policy;
  - e. establish and maintain a safety risk management process including the identification of safety hazards associated with the activities of the UAS operator, as well as their

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evaluation and the management of associated risks, including taking action to mitigate those risks and verify the effectiveness of the action;


- f. promote safety in the organisation through:
    - i. training and education;
    - ii. communication;
  - g. document all safety management system key processes for making personnel aware of their responsibilities and of the procedure for amending this documentation; key processes include:
    - i. safety reporting and internal investigations;
    - ii. operational control;
    - iii. communication on safety;
    - iv. training and safety promotion;
    - v. compliance monitoring;
    - vi. safety risk management;
    - vii. management of change;
    - viii. interface between organisations;
    - ix. use of sub-contractors and partners;
  - h. include an independent function to monitor the compliance and adequacy of the fulfilment of the relevant requirements of this Regulation, including a system to provide feedback of findings to the accountable manager to ensure effective implementation of corrective measures as necessary;
  - i. include a function to ensure that safety risks inherent to a service or product delivered through subcontractors are assessed and mitigated under the operator's safety management system.
3. If the organisation holds other organisation certificates, the safety management system of the UAS operator may be integrated with the safety management system that is required by any of those additional certificate(s).

## AMC1 UAS.ROC.030(2) Safety management system

### **PERSONNEL REQUIREMENTS — GENERAL**

1. The accountable manager shall have the authority to ensure that all activities are carried out in accordance with the requirements of the UAS Regulation.
2. The safety manager shall:

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- a. facilitate hazard identification, risk analysis, and risk management
  - b. monitor the implementation of risk mitigation measures;
  - c. provide periodic reports on safety performance;
  - d. ensure maintenance of the safety management documentation;
  - e. ensure that there is safety management training available and that it meets acceptable standards;
  - f. provide all the personnel involved with advice on safety matters; and
  - g. ensure the initiation and follow-up of internal occurrence investigations.
3. Management and other personnel of the ROC holder shall be qualified for the planned operations in order to meet the relevant requirements of the UAS Regulation.
  4. The ROC holder shall ensure that its personnel receive appropriate training to remain in compliance with the relevant requirements of the UAS Regulation.

## GM1 UAS.ROC.030(2)(a) Safety management system

### **ACCOUNTABLE MANAGER**


The accountable manager is a single, identifiable person who has the responsibility for the effective and efficient performance of the ROC holder's safety management system.

## AMC1 UAS.ROC.030(2)(c) Safety management system

### **SAFETY POLICY**

1. The safety policy shall:
  - a. be endorsed by the accountable manager
  - b. reflect organisational commitments regarding safety, and its proactive and systematic management;
  - c. be communicated, with visible endorsement, throughout the organisation;
  - d. include internal reporting principles, and encourage personnel to report errors related to UAS operations, incidents and hazards; and
  - e. recognise the need for all personnel to cooperate with compliance monitoring and safety investigations.
2. The safety policy shall include a commitment to:
  - a. improve towards the highest safety standards

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- b. comply with all applicable legislation, meet all applicable standards, and consider best practices;
  - c. provide appropriate resources;
  - d. apply the human factors principles;
  - e. enforce safety as a primary responsibility of all managers; and
  - f. apply ‘just culture’ principles and, in particular, not to make available or use the information on occurrences:
    - i. to attribute blame or liability to someone for reporting something which would not have been otherwise detected; or
    - ii. for any purpose other than the improvement of safety.
3. The senior management of the UAS operator shall:
- a. continually promote the UAS operator’s safety policy to all personnel, and demonstrate their commitment to it
  - b. provide the necessary human and financial resources for the implementation of the safety policy; and
  - c. establish safety objectives and associated performance standards.

**GM1 UAS.ROC.030(2)(c) Safety management system**

**SAFETY POLICY**

The safety policy is the means whereby an organisation states its intention to maintain and, where practicable, improve safety levels in all its activities and to minimise its contribution to the risk of an accident or serious incident as far as is reasonably practicable. It reflects the management’s commitment to safety, and shall reflect the organisation’s philosophy of safety management, as well as be the foundation on which the organisation’s safety management system is built. It serves as a reminder of ‘how we do business here’. The creation of a positive safety culture begins with the issuance of a clear, unequivocal direction.


The commitment to apply ‘just culture’ principles forms the basis for the organisation’s internal rules that describe how ‘just culture’ principles are guaranteed and implemented.

**GM1 UAS.ROC.030(2)(d) Safety management system**

**PERSONNEL REQUIREMENTS**

The functions of the safety manager may be fulfilled by the accountable manager or another person charged by the UAS operator with the responsibility of ensuring that the UAS operator remains in compliance with the requirements of the UAS Regulation.

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Where the safety manager already fulfils the functions of the compliance monitoring manager, the accountable manager cannot be the safety manager. Depending on the size of the organisation and the nature and complexity of its activities, the safety manager may be assisted by additional safety personnel for the performance of all the safety management tasks. Regardless of the organisational set-up, it is important that the safety manager remains the unique focal point as regards the development, administration, and maintenance of the organisation’s management system.

## PERSONNEL REQUIREMENTS

A UAS operator may include a safety committee in the organisational structure of its safety management system and, if needed, one or more safety action groups.

### 1. Safety committee

A safety committee shall be established to support the accountable manager in their safety responsibilities. The safety committee shall monitor:

- a. the UAS operator’s performance against safety objectives and performance standards
- b. whether safety action is taken in a timely manner; and
- c. the effectiveness of the UAS operator’s safety management processes

### 2. Safety action group

- a. Depending on the scope of the task and the specific expertise required, one or more safety action groups shall be established to assist the safety manager in their functions.
- b. The safety action group shall be comprised of managers, supervisors and personnel from operational areas, depending on the scope of the task and the specific expertise required.
- c. The safety action group shall at least perform the following:
  - i. monitor operational safety and assess the impact of operational changes on safety;
  - ii. define actions to mitigate the identified safety risks; and
  - iii. ensure that safety measures are implemented within agreed timescales.


## GM3 UAS.ROC.030(2)(d) Safety management system

### KEY SAFETY PERSONNEL

The UAS operator shall appoint personnel to manage key fields of activity such as operations, maintenance, training, etc.

## AMC1 UAS.ROC.030(2)(g) Safety management system

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## DOCUMENTATION

The safety management system documentation of the ROC holder shall be included in an SMM or in the ROC manual. If that documentation is contained in more than one operator's manual and is not duplicated, cross references shall be provided.

### GM3 UAS.ROC.030(2)(g) (i) Safety management system

## SAFETY REPORTING AND INTERNAL INVESTIGATIONS

The purpose of safety reporting and internal investigations is to use reported information to improve the level of safety performance of the UAS operator. The purpose is not to attribute blame or liability. The specific objectives of safety reporting and internal investigations are to:

1. enable assessments of the safety implications of each relevant incident and accident, including previous similar occurrences, so that any necessary action can be initiated; and
2. ensure that knowledge of relevant incidents and accidents is disseminated so that other persons and UAS operators may learn from them.

All occurrence reports that are considered to be reportable by the person who submits the report shall be retained, as the significance of such reports may only become obvious at a later date.

### AMC1 UAS.ROC.030 (2)(g)(iii) Safety management system

## COMMUNICATION ON SAFETY

1. The organisation shall establish communication about safety matters that:
  - a. ensures that all personnel are aware of the safety management activities as appropriate for their safety responsibilities;
  - b. conveys safety-critical information, especially information related to assessed risks and analysed hazards;
  - c. explains why particular actions are taken; and
  - d. explains why safety procedures are introduced or changed.
2. Regular meetings with personnel, where information, actions, and procedures are discussed, may be used to communicate safety matters.


### GM1 UAS.ROC.030(2)(g)(iv) Safety management system

## TRAINING AND SAFETY PROMOTION

Training, combined with safety communication and information sharing form part of safety promotion and supplement the organisation's policies, encouraging a positive safety culture and creating an environment that is favourable to the achievement of the organisation's safety objectives.

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Safety promotion can also be the instrument for the development of a just culture. Depending on the particular risk, safety promotion may constitute or complement a risk mitigation action and an effective reporting system.

## COMPLIANCE MONITORING

1. The accountable manager shall designate a manager to monitor the compliance of the ROC holder with:
  - a. the terms of approval, the privileges, the risk assessment and the resulting mitigation measures
  - b. all operator's manuals and procedures; and
  - c. training standards.
  
2. The compliance monitoring manager shall:
  - a. have knowledge of, and experience in, compliance monitoring
  - b. have direct access to the accountable manager to ensure that findings are addressed, as necessary; and
  - c. not be one of the other persons referred to in UAS.ROC.030(2)(c).
  - d. The tasks of the compliance monitoring manager may be performed by the safety manager, provided that the latter has knowledge of, and experience in, compliance monitoring.
  - e. The compliance monitoring function shall include audits and inspections of the ROC holder. The audits and inspections shall be carried out by personnel who are not responsible for the function, procedure or products being audited.
  - f. An organisation shall establish an audit plan to show when and how often the activities as required by the UAS Regulation will be audited.
  - g. The independent audit shall ensure that all aspects of compliance, including all the subcontracted activities, are checked within a period defined in the scheduled plan, and agreed by the competent authority.
  - h. Where the organisation has more than one approved location, the compliance monitoring function shall describe how these locations are integrated into the system and include a plan to audit each location in a risk-based programme as agreed by the competent authority.
  - i. A report shall be raised each time an audit is carried out, describing what was checked and the resulting findings against applicable requirements and procedures.
  - j. The feedback part of the compliance monitoring function shall address who is required to rectify any non-compliance in each particular case, and the procedure to be followed if rectification is not completed within appropriate timescales. The procedure shall lead to the accountable manager.

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- k. The ROC holder shall be responsible for the effectiveness of the compliance monitoring function, in particular for the effective implementation and follow-up of all corrective measures.

## COMPLIANCE MONITORING

The primary objective of the compliance monitoring function is to enable the UAS operator to ensure a safe operation and to remain in compliance with the UAS Regulation. An external organisation may be contracted to perform compliance monitoring functions. In such cases, that organisation shall designate the compliance monitoring manager. The compliance monitoring manager may use one or more auditors to carry out compliance audits and inspections of the ROC holder under their own responsibility.


## AMC1 UAS.ROC.030(2)(g)(vi) Safety management system

### SAFETY RISK MANAGEMENT

The ROC holder shall have a safety management system that is able to perform at least the following:

1. identify hazards through reactive, proactive, and predictive methodologies, using various data sources, including safety reporting and internal investigations;
2. collect, record, analyse, act on and generate feedback about hazards and the associated risks that affect the safety of the operational activities of the UAS operator;
3. develop an operational risk assessment as required by UAS.ANO.11;
4. carry out internal safety investigations;
5. monitor and measure safety performance through safety reports, safety reviews, in particular during the introduction and deployment of new technologies, safety audits, including periodically assessing the status of safety risk controls, and safety surveys;
6. manage the safety risks related to a change, using a documented process to identify any external and internal change that may have an adverse effect on safety; the management of change shall make use of the UAS operator's existing hazard identification, risk assessment, and mitigation processes;
7. manage the safety risks that stem from products or services delivered through subcontractors, by using its existing hazard identification, risk assessment, and mitigation processes, or by requiring that the subcontractors have an equivalent process for hazard identification and risk management; and
8. respond to emergencies using an ERP that reflects the size, nature, and complexity of the activities performed by the organisation. The ERP shall:
  - a. contain the action to be taken by the UAS operator or specified individuals in an emergency
  - b. provide for a safe transition from normal to emergency operations and vice versa;
  - c. ensure coordination with the ERPs of other organisations, where appropriate; and

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- d. describe emergency training/drills, as appropriate.

## **SAFETY RISK MANAGEMENT**

In very broad terms, the objective of safety risk management is to eliminate risk, where practical, or reduce the risk (likelihood/severity) to acceptable levels, and to manage the remaining risk to avoid or mitigate any possible undesirable outcome. Safety risk management is, therefore, integral to the development and application of effective safety management.

Safety risk management can be applied at many levels in an organisation. It can be applied at the strategic level and at operational levels. The potential for human error, its influences and sources, shall be identified and managed through the safety risk management process. Human factors risk management shall allow the organisation to determine where it is vulnerable to human performance limitations.

## **GM1 UAS.ROC.030(2)(g)(vii) Safety management system**

### **MANAGEMENT OF CHANGE**

Unless properly managed, changes in organisational structures, facilities, the scope of work, personnel, documentation, policies and procedures, etc. can result in the inadvertent introduction of new hazards, which expose the organisation to new, or increased risk. Effective organisations seek to improve their processes, with conscious recognition that changes can expose the organisations to potentially latent hazards and risks if the changes are not properly and effectively managed.

Regardless of the magnitude of a change, large or small, proactive consideration shall always be given to the safety implications. This is primarily the responsibility of the team that proposes and/or implements the change. However, change can only be successful if all the personnel affected by the change are engaged and involved, and they participate in the process. The magnitude of a change, its safety criticality, and its potential impact on human performance shall be assessed in any change management process.


The process for the management of change typically provides principles and a structured framework for managing all aspects of the change. Disciplined application of change management can maximise the effectiveness of the change, engage staff, and minimise the risks inherent in change.

Change is the catalyst for an organisation to perform the hazard identification and risk management processes.

Some examples of change include, but are not limited to:

1. changes to the organisational structure;
2. a new type of UAS being employed;
3. additional UASs of the same or similar type being acquired;
4. significant changes in personnel (affecting key personnel and/or large numbers of personnel, high turn-over);
5. new or amended regulations;
6. changes in financial status;

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7. new location(s), equipment, and/or operational procedures; and
8. new subcontractors.

A change may have the potential to introduce new human factors issues or exacerbate pre-existing issues. For example, changes in computer systems, equipment, technology, personnel (including the management), procedures, the work organisation, or work processes are likely to affect performance.

The purpose of integrating human factors into the management of change is to minimise potential risks by specifically considering the impact of the change on the people within a system.

Special consideration, including any human factors issues, shall be given to the ‘transition period’. In addition, the activities utilised to manage these issues shall be integrated into the change management plan. Effective management of change shall be supported by the following:

1. implementation of a process for formal hazard analyses/risk assessment for major operational changes, major organisational changes, changes in key personnel, and changes that may affect the way a UAS operation is carried out;
2. identification of changes likely to occur in business which would have a noticeable impact on:
  - a. resources — material and human
  - b. management guidance — processes, procedures, training; and
  - c. management control;
3. safety case/risk assessments that are focused on aviation safety; and
4. involvement of key stakeholders in the change management process as appropriate.

During the change management process, previous risk assessments and existing hazards are reviewed for possible effects.

## GM1 UAS.ROC.030(2)(g)(viii) Safety management system


### **SAFETY RISK MANAGEMENT — INTERFACES BETWEEN ORGANISATIONS**

Safety risk management processes shall specifically address the planned implementation of, or participation in, any complex arrangements (such as when multiple organisations are contracted, or when multiple levels of contracting/subcontracting are included).

Hazard identification and risk assessment start with the identification of all parties involved in the arrangement, including independent experts and non-approved organisations. This extends to the overall control structure, and assesses in particular the following elements across all subcontract levels and all parties within such arrangements:

1. coordination and interfaces between the different parties;
2. applicable procedures;

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3. communication between all the parties involved, including reporting and feedback channels;
4. task allocation, responsibilities and authorities; and
5. the qualifications and competency of key personnel.

Safety risk management shall focus on the following aspects:

1. only one party is responsible for a specific aspect of the arrangement — there shall be no overlapping or conflicting responsibilities, in order to eliminate coordination errors;
2. clear assignment of accountability and allocation of responsibilities;
3. the existence of clear reporting lines, both for occurrence reporting and progress reporting; and
4. the possibility for staff to directly notify the organisation of any hazard by suggesting an obviously unacceptable safety risk as a result of the potential consequences of this hazard.

Regular communication between all parties to discuss work progress, risk mitigation actions, changes to the arrangement, as well as any other significant issues, shall be ensured.

### UAS.ROC.040 ROC manual


1. An ROC holder shall provide CAAB with an ROC manual describing directly or by cross reference its organisation, the relevant procedures and the activities carried out.
2. The manual shall contain a statement signed by the accountable manager that confirms that the organisation will at all times work in accordance with this Regulation and with the approved ROC manual. When the accountable Manager is not the Chief Executive Designated person of the organisation, the chief executive designated person shall countersign the statement.
3. If any activity is carried out by partner organisations the UAS operator shall include in the ROC manual procedures on how the ROC holder shall manage the relationship with those partner organisations or subcontractors.
4. The ROC manual shall be amended as necessary to retain an up-to-date description of the ROC holder's organisation, and copies of amendments shall be provided to the competent authority.
5. The UAS operator shall distribute the relevant parts of the ROC manual to all its personnel in accordance with their functions and duties.

### AMC1 UAS.ROC.040 ROC manual

#### GENERAL

1. The ROC holder shall ensure that all personnel are able to understand the language in which those parts of the ROC manual which pertain to their duties and responsibilities are written.

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2. The ROC manual shall contain a statement signed by the accountable manager that confirms that the organisation will at all times work in accordance with the UAS Regulation, as applicable, and with the approved ROC manual. When the accountable manager is not the chief executive designated person of the organisation, then the chief executive designated person shall countersign the statement.

## AMC2 UAS.ROC.040 ROC manual

### GENERAL


The ROC manual may contain references to the OM, where an OM is compiled in accordance with GM1 UAS. SPECIFIC.030(3)(e).

The ROC manual shall contain at least the following information, customised according to the complexity of the UAS operator.

### ROC MANUAL TEMPLATE

1. Operator's name
2. Table of contents
3. Introduction (the information under Chapter O, points 1-6 of the OM may be duplicated here or simply referenced to the OM)
4. SMM
  - a. Safety policy (provide details of the UAS operator's safety policy, safety targets)
  - b. Organisational structure (include the organogram and brief description thereof)
  - c. Duties and responsibilities of the accountable manager and key management personnel; (in addition, clearly identify the person who authorises operations)
  - d. Safety management system (provide a description of the safety management system, including the lines of responsibilities with regard to safety matters)
  - e. Operational control system (provide a description of the procedures and responsibilities necessary to exercise operational control with respect to flight safety)
  - f. Compliance monitoring (provide a description of the compliance monitoring function)
  - g. Safety risk management (the information about hazard identification, safety risk assessment and mitigation under Chapter A of the OM may be duplicated here or simply referenced to the OM)
  - h. Management of change (description of the process to identify safety-critical changes within the organisation and its operation and to eliminate or modify safety risk controls that are no longer needed or effective due to such changes)

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- i. Development and approval of an operational scenario (provide a description of the process)
  - j. Interface with subcontractors and partners (describe the relationship with any subcontractor delivering products or services to the UAS operator as well as with partners, if available)
  - k. Documentation of key management system processes
5. OM (the information under Chapters 2-11 of the OM may be duplicated here or references to the OM may be provided)
  6. Handling, notifying and reporting accidents, incidents and occurrences
  7. Handling of dangerous goods (specify the relevant regulations and instructions to crew members concerning the transport of dangerous goods such as pesticides and chemicals, etc. and the use of dangerous goods during operations such as batteries and fuel cells, engines, magnetising materials, pyrotechnics, flares and firearms)

### UAS.ROC.050 Terms of approval of the ROC holder

- a. CAAB shall issue an ROC after it is satisfied that the UAS operator complies with points UAS.ROC.020, UAS.ROC.030 and UAS.ROC.040.
- b. The ROC shall include:
  - a. the UAS operator identification;
  - b. the UAS operator's privileges;
  - c. authorised type(s) of operation;
  - d. the authorised area, zone or class of airspace for operations, if applicable;
  - e. any special limitations or conditions, if applicable;

### AMC1 UAS.ROC.050 Terms of approval of an ROC holder


Forms for the terms of approval attached in Appendix E Forms

### UAS.ROC.060 Privileges of the ROC holder

When satisfied with the documentation provided, authority:

1. shall specify the terms and conditions of the privilege granted to the UAS operator in the ROC; and
2. may, within the terms of approval, grant to an ROC holder the privilege to authorise its own operations without:

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1. submitting an operational declaration
2. applying for an operational authorisation.

## AMC1 UAS.ROC.060 Privileges of an ROC holder

### SCOPE OF PRIVILEGES

Within the terms of its approval, the ROC holder shall be able:

1. without prior declaration to the competent authority, to authorise its own operations based on an STS ;
2. ROC holder may form flyers association and training center.
3. without prior approval of the authority, to authorise one or more of the following types of own operations:
  - a. one based on a risk assessment that requires an authorisation
  - b. one based on one or more modifications of an STS (variants), which does not involve changes in the ConOps, the category of UAS used or the competencies of the remote pilots ;  
or
  - c. one that does not correspond to a risk, but falls within a type of activity already performed by the UAS operator.

## UAS.ROC.070 Changes in the ROC management system

After an ROC is issued, the following changes require prior approval by the competent authority:

1. any change in the terms of approval of the UAS operator;
2. any significant change to the elements of the ROC holder's safety management system as required by point UAS.ROC.030.

## AMC1 UAS.ROC.070(2) Changes in the ROC management system

### CHANGES REQUIRING PRIOR APPROVAL

A change of the accountable manager is considered a significant change that requires a prior approval.

## UAS.ROC.075 Transferability of an ROC


Except for the change to the ownership of the organisation, approved by CAAB in accordance with point UAS.ROC.070, an ROC is not transferable.

## UAS.ROC.080 Duration and validity of an ROC

1. An ROC shall be issued for an unlimited duration. It shall remain valid subject to:

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- a. the ROC holder’s continuous compliance with the relevant requirements of Regulation
  - b. it not being surrendered or revoked.
2. Upon revocation or surrender of an ROC, the ROC holder shall provide an acknowledgment in digital format that must be returned to CAAB without delay.

### **UAS.ROC.090 Access**

For the purpose of demonstrating compliance with this Regulation, the ROC holder shall grant any person, that is duly authorised by the competent authority, an access to any facility, UAS, document, records, data, procedures or to any other material relevant to its activity, which is subject to certification, operational authorisation or operational declaration, regardless of whether or not its activity is contracted or subcontracted to another organisation.

### **UAS.ROC.100 Limitations**

ROC holder when operate in specific category, before carrying out each flight authorisation has to be taken as per the flight authorisation procedure unless granting any exemption which also indicated in Flight Authorisation Certificate

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## PART D —UAS TRAINING ORGANIZATION (ATO)


### UAS.ATO.010 General Requirements for an ROC

1. Become an approved UAS training provider, being someone who is certificated under regulation to hold an operator's certificate and is authorized by that certificate to conduct training.
2. The guidance applies to all training providers intending to deliver training for the issue of a RPL regardless of the form of training the provider intends to deliver

### UAS.ATO.020 Application Process

1. CAAB shall conduct all new (initial issue) applicants to book a pre-application meeting before preparing an application.
2. While an applicant proposing to conduct a RPL training course provide details of the proposed training. A complete application must include the following documentation:
  - a. Remote Operator Certificate
  - b. Filled up Checklist
  - c. Application for RPL Training
  - d. Documented practices and procedures
  - e. A training syllabus, indicating all RPL course content relevant to the courses the applicant is applying to conduct
  - f. An individual course curriculum for each of the courses the applicant is applying to conduct
  - g. All course material including:
    - i. All lesson plans. This includes lessons covering the Aeronautical Knowledge Standards and the Practical Competency Standards
    - ii. All lesson materials that are used to communicate the syllabus (Power Point lessons / online slide shows / video lessons / handouts) and/or lessons conducted through other means
  - h. All copies of the Aeronautical Knowledge Examination
  - i. A Practical Competency Flight Test for each category of UAS included in the training course or courses being applied for
  - j. All other relevant material, possibly including:

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- i. Student course flight log template
  - k. Student course material handouts (timetables, course exercises, student code of conduct, student version exam policy)
  - l. All instructor notes per lesson given (what the instructor needs to say to cover off the required items in the syllabus)
  - m. If not included within the operators documented practices and procedures, the application must include:
    - i. The proposed location(s) for theoretical (classroom) and practical training (flying training areas)
    - ii. Documentation describing the proposed RPAS to be operated for training and supporting role equipment. This includes copies of the manufacturer’s documentation
    - iii. The names of all nominated and suitably qualified RPL instructors.
  - n. When a complete application is received by CAAB, the applicant will be given an estimate of the application cost for assessment.
3. The submitted documentation will be assessed by the assigned CAAB designated person and commence assessment of the
    - a. written material and provide the applicant with requests for further information or clarification where required.
    - b. On-site assessments are conducted at the applicant's proposed training location over one or two days
  4. the CRP and ROC holder remain responsible for ensuring that the operations are carried out in accordance not only with the relevant aviation legislation, but also with the operator’s documented practices and procedures.
  5. The CRP or nominated ‘chief instructor’ will be required to deliver two or three demonstration lessons of RPAS theory over four to five hours.
  6. The CRP or nominated chief instructor will be required to deliver two or three demonstration lessons of UAS practical training over two to four hours.
  7. If there are any deficiencies that cannot be remediated during the assessment phase, the CAAB designated person will indicate in writing the areas that need rework. The report shall cover all aspects of the assessment phase, including course content, facilities and instructors.

## UAS.ATO.030 ATO Structure


1. The applicant will need to amend the organisational structure diagram in their manuals to indicate where within the organisation the role of RPL instructor, as well as where the role of chief instructor, if applicable, will sit. Below example ROC organisational structure

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2. The applicant will need to list the accountabilities and responsibilities of the RPL Instructors and, if the position exists, the chief instructor within the UAS operations manual.
3. Chief instructor is responsible for all theory and operational training operations under the authority of the ROC. The roles and responsibilities of chief instructor are to:
  - a. ensure that all training operations are conducted safely and in accordance with section of this manual and to adhere to any requirements set out in the manual of standards
  - b. review all changes to RPL training material conduct regular currency checks of nominated instructors in both theory and operational training.
4. The applicant will need to have policies and procedures in their operations manual for instructor and assessor nomination and currency.
5. All instructors conducting RPL Training Course must have Pilot instructor rating
6. Instructor initial training demonstrated to the CAAB no less than three lessons containing aeronautical knowledge units and three lessons containing practical competency units.
7. The chief instructor must have assessed each RPL Instructor conducting two lessons containing aeronautical knowledge units and two lessons containing practical competency units in the previous 12 months. RPL Instructors must also meet the currency and recency requirements for Remote Pilots.
8. The Chief Remote Pilot is required to maintain a record of each RPL instructor's qualifications and training relevant to sections Instructor qualifications, Instructor initial training and Instructor currency and recency section.
9. Each student's record must be stored digitally.
10. All changes to a RPL training course syllabus, lesson plans or lessons are required to be reviewed by the chief instructor.
11. The RPL Training course syllabus and lesson plans must remain compliant with the regulation once accepted by CAAB.
12. Shortlisted documents to be submitted to CAAB for UATO Approval
  - a. Application for UATO
  - b. Key personnel (if applicable)
  - c. Operations Manual
  - d. Operational Procedures Library
  - e. RPL Training Syllabus and Course Curricula
  - f. Lesson Plans

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- g. Slide packs, presentations and instructor notes
- h. Theory Exams
- i. Operational/Practical test(s)
- j. Student Handbook (Student Course Information)
- k. Instructor Resume(s) and log book(s)
- l. Description of Aircraft used for training
- m. Description of Synthetic training devices
- n. Description of theory training facilities
- o. Description of operational training areas

## GM1 UAS.ATO.010 Organization Structure

Following is sample Organization structure :

## UAS.ATO.040 RPL Training Course

An operator providing RPL training must maintain a course which delivers the aeronautical knowledge and practical competency standards.

1. Basic UAS Certification
  - a. Remote Pilot License
  - b. Theoretical Competency
2. Practical Competency
3. Advanced RPL Training Course (Airplane/Rotor/VTOL)

## GM1 UAS.ATO.040 RPL Training Course Syllabus

Lessons for multiple RPL training courses shall be combined as a single syllabus. The syllabus may be inserted into a section of the company operations manual, or it may be kept as a separate document or appendix. The following is a list of the requirements for the syllabus and the minimum information to be included:


1. The syllabus shall be an editable text document in English.
2. Lesson Code: The unique identifier (ID) created by the ROC holder for a lesson plan and lesson presentation. An example code might be TA1 (Theory-Aero plane lesson 1) or PA1 (Practical-Aeroplane-lesson 1).

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3. Lesson Name: The name created by the ROC holder for a lesson plan and lesson presentation.
4. RPL Unit Items: The items from the RPL course unit which are included in the lesson shall be listed. If the unit has been broken up into two or more separate lessons, list which items are included in this lesson. If all items are included in the lesson, simply state this.
5. A course curriculum indicates the specific lessons and timings which will comprise a single RPL training course. The curriculum shall identify these lessons from the operator's submitted RPL Training Syllabus.
6. Constructing a RPL course curriculum :The following minimum information is to be included within the course curriculum: Number of course days
7. Durations, which show: that the RPL training course will meet the minimum instructional student contact time with a RPL training instructor of 15 hours for the aeronautical knowledge component of the course
8. that the RPL training course will provide the student a minimum of 5 hours experience in operating an RPA under the standard RPA operating conditions (applicable to initial RPL training course only).
9. Lessons, including: Lesson code , Lesson name.
10. Curriculum assessment. The curriculum will be assessed to ensure the course is feasible within the defined timeframe. Example course curriculum for a small aeroplane category - RPL

	0730- 0920	Break	0930- 1055	1100- 1200	Lunch	1300-1415	1420- 1535	1540-1655
Day 1	Intro & TA1- Aeroplane UAS Category		PA1- Operation Planning & Navigation PA2- Management & Other Roles			PA3-Pre-flight, Post flight and Battery Management  PA4- Lunch & Recovery		PA5- Normal Operations
	0730- 0920	Break	0930- 1055	1100- 1200	Lunch	1300-1415	1420- 1535	1540-1655
Day 2	PA5- Normal Operations		PA6- Abnormal & Emergency Operations PA7- Advanced Operations			PA7- Advanced Operations PA8- Automated Operations		Flight Test & Final Administration

11. lesson plan must be provided for all the lessons delivered within the proposed course. Each lesson plan shall describe how a single lesson will be presented. Lesson plans shall include the following information:
  - a. lesson code
  - b. lesson name
  - c. learning outcomes

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- d. formative/competency testing method (examination or flight test)
  - e. required prior learning
  - f. previous lesson
  - g. following lesson
  - h. instructor requirement
  - i. location
  - j. lesson duration
  - k. required physical resources
  - l. required digital resources and their location
  - m. outline of instructor's notes for lesson
  - n. the required activity/behaviors which are to be demonstrated by the student to the instructor (practical lessons only)
  - o. The tolerances and range of variables for each activity/behavior that must be performed for the student to be deemed competent.
12. There must be no more than 10 students to 1 instructor for training including aeronautical knowledge units and 5 students to 1 instructor for training including practical competency units. The instructor must hold a RPL and have at least 20 hours of operational experience for a ROC holder.
13. For a RPL training course with an RPAS in the medium or large weight ranges, the flight test must be conducted with the same RPAS that the student was deemed competent for the practical competency units. The RPL flight test must require the student to demonstrate competency against each standard, and within the stated tolerance listed in the relevant regulation. The flight test must describe each activity and maneuver to be performed before the examiner in the actual order they will be conducted.


UAS Small Aeroplane Category - RPL Upgrade Course	
Lesson Code: PA4	Lesson Name: Launch and recovery
Location: Flight Area [ADDRESS HERE]	Duration: 100 minutes
Who can Teach: RPL chief instructor RPL Instructor	
Required Prior Knowledge: Aeronautical Knowledge component of the RPL Course	
Previous Unit: PA3 – Pre-flight, Post-flight and battery management	Next Unit: PA5 – Normal Operations
Lesson Activity: Flight 1	

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Formative Test: Flight 1		Summative Test: RPAS Aeroplane Flight Test
Resources:		
Files & File Locations:		
Associated Risk Assessment: RPL Flight Training Area Risk Assessment		
Lesson Objectives: <ol style="list-style-type: none"> <li>1. UAS operational site considerations</li> <li>2. Conducting a JSA and RA validation</li> <li>3. Operational pre-flight and post-flight procedures</li> <li>4. Operational pre-flight briefing</li> <li>5. Aircraft orientation considerations</li> <li>6. RPAS launch, basic manoeuvring and recovery.</li> </ol>		
Time	Content & Instructor Activity	Tolerance & range of variables
	Lesson Introduction (as a group) <ol style="list-style-type: none"> <li>1. Brief students on lesson objectives and exercises to be conducted in this lesson</li> <li>2. Discuss site considerations with students</li> <li>3. Review the risk assessment with students</li> <li>4. Review pre-flight &amp; post-flight procedures</li> <li>5. Give students the lesson pre-flight brief.</li> </ol>	
	Lesson Body (run individually with each student under supervision) <ol style="list-style-type: none"> <li>1. Student to set up RPA in flight area.</li> <li>2. Student to conduct pre-flight.</li> <li>3. Student to give pre-flight brief.</li> <li>4. Student performs RPAS manoeuvres:               <ol style="list-style-type: none"> <li>a. Engine start</li> <li>b. Launch 2 m vertically and hover</li> <li>c. Pirouette – 90° right, 180° left</li> <li>d. Fly 10 m left, hover over cone. 20 m right, hover over cone. Return to launch point. Maintain nose out</li> <li>e. Land.</li> </ol> </li> <li>5. Student to conduct post-flight.</li> <li>6. Instructor to debrief student.</li> </ol>	Student to demonstrate: <ol style="list-style-type: none"> <li>1. Control over the multirotor that is on the ground.</li> <li>2. Stable hover over the cone and postlaunch checks completed in accordance with checklist.</li> <li>3. Complete full circles and stop within 20° of required point.</li> <li>4. Stop and hover within 1 m of the cone.</li> <li>5. Stable landing on designated spot with no bouncing or damage.</li> </ol>



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	<ol style="list-style-type: none"> <li>7. If required, repeat until student competent.</li> <li>8. Once competent, send the student to practice manoeuvres two more times at the practice area. They are to repeat all steps.</li> </ol>	
	<p>Lesson summary (as a group)</p> <ol style="list-style-type: none"> <li>1. Confirm all students have been taken through the lesson and had two run throughs on their own.</li> <li>2. Debrief the students on their performance.</li> <li>3. Summarise the lesson.</li> </ol>	
<b>APPROVED BY CHIEF INSTRUCTOR</b>		
Name:	Signature:	Date:

## UAS.ATO.040 RPL Training Syllabus & Knowledge Requirements

Exams cover an extremely broad scope of subject matter. The following is a list of the major topic areas, all of which are prerequisites knowledge for undertaking UAS license:

1. Theoretical Assessment
  - a. Regulations & ANOs
    - i. Task A. General
    - ii. Task B. Operating Rules
    - iii. Task C. Remote Pilot Certification
    - iv. Task D. Waivers
    - v. Task E. Operations Over People
  - b. Airspace Classification and Operating Requirements
    - i. Task A. Airspace Classification
    - ii. Task B. Airspace Operational Requirements
  - c. Weather
    1. Task A. Sources of Weather
    2. Task B. Effects of Weather on Performance
  - d. Loading and Performance

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- e. Operations of UAS
  - i. Radio Communications Procedures
  - ii. Airport Operations
  - iii. Emergency Procedures
  - iv. Aeronautical Decision-Making
  - v. Physiology
  - vi. Maintenance and Inspection Procedures
- f. Theory of Flight
  - i. RPAS airframes, power plants, propulsion and systems
- 2. Flight Competency test
  - a. Pre-flight planning procedures
  - b. Perform a take-off
  - c. Manual flight procedure
  - d. Lost link procedures
  - e. “Fly away” procedures
  - f. Emergency procedures
  - g. Perform a landing

## GM1 UAS.ROC.020(3) Training Syllabus

The applicable type of operation (basic and advanced) is shown to the left of the topics. Sample learning objectives are listed after the topics. The list of sample objectives is not all-inclusive, its purpose is to illustrate the depth of knowledge required to operate UAS.

### Regulations & ANOs


Private	Specific	Topics
		Task A. General
		To determine that the applicant is knowledgeable in the general regulatory requirements
		The applicant demonstrates understanding of:
		Applicability of 1 unmanned aircraft operations.



Private	Specific	Topics
		Definitions in ANO
		The ramifications of falsification, reproduction, or alteration of a certificate, rating, authorization, record, or report.
		Accident reporting.
		Inspection, testing, and demonstration of compliance.
		Multiple category UAS.
		Record retention.
<b>Task B. Operating Rules</b>		
To determine that the applicant is knowledgeable of the operating rules, the registration rules, and other associated operating requirements.		
The applicant demonstrates understanding of:		
		Registration requirements for UAS.
		Requirement for the UAS to be in a condition for safe operation.
		Medical condition(s) that would interfere with safe operation of an UAS.
		Responsibility and authority of the remote PIC.
		a. Allowing a person other than the remote PIC to manipulate the flight controls
		Regulatory deviation and reporting requirements for in-flight emergencies.
		Hazardous operations.
		a. Careless or reckless
		b. Dropping an object
		Operating from a moving aircraft or moving land- or water-borne vehicle.
		Alcohol or drugs and the provisions on prohibition of use.
		Daylight operations.
		Visual line of sight (VLOS) aircraft operations.
		Requirements when a visual observer is used.
		Prohibition of operating multiple UAS.
		Prohibition of carrying hazardous material.
		Staying safely away from other aircraft and right-of-way rules.
		a. See and avoid other aircraft and other potential hazard considerations of the remote PIC
		Operations over human beings (Refer to Area of Operation I, Task E).
		Prior authorization required for operation in certain airspace.



Private	Specific	Topics
		Operating in the vicinity of airports.
		Operating in prohibited or restricted areas.
		Flight restrictions in the proximity of certain areas designated by notice to airmen (NOTAM).
		Preflight familiarization, inspection, and actions for aircraft operations.
		Operating limitations for UAS.
		a. Maximum groundspeed
		b. Altitude limitations
		c. Minimum visibility
		d. Cloud clearance requirements
		Requirements for a Remote Pilot Certificate with an UAS rating.
		Automated operations.
		Civil twilight operations.
		Night operations.
		Transportation of property.
		ATC transponder equipment prohibition.
		ADS-B Out prohibition.
<b>Task C. Remote Pilot Certification</b>		
To determine that the applicant is knowledgeable in the requirements associated with remote pilot certification with an UAS rating.		
		The applicant demonstrates understanding of:
		Offenses involving alcohol or drugs.
		The consequences of refusing to submit to a drug or alcohol test or to furnish test results.
		The eligibility requirements for a Remote Pilot Certificate with an UAS rating.
		Aeronautical knowledge recency.
<b>Task D. Waivers</b>		
To determine that the applicant is knowledgeable of the waiver policy and requirements.		
The applicant demonstrates understanding of:		
		Waiver policy and requirements.
<b>Task E. Operations Over People</b>		

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Private	Specific	Topics
		To determine that the applicant is knowledgeable of the operating rules , and the associated operating requirements when operating over people.
		The applicant demonstrates understanding of:
		Remote pilot responsibilities when operating over people.
		Operations over people at night.
		Category of operations
		Selecting an operational area.
		Minimum distances from a person.
		Operations over moving vehicles.
		Modifications to an UAS.
		Closed and restricted access sites.
		Remote Pilot operating instructions.
		Required components and Category declaration.
		Optional components.
		Applicant produced, designed, or modified UAS for operations over people.
		Declaration of Compliance (DoC).
		Maintenance of an UAS that is eligible for operations over people.
		Means of Compliance (MoC).
		Impact kinetic energy.
		Exposed rotating parts.

### Airspace Classification and Operating Requirements

Private	Specific	Topics
		Task A. Airspace Classification
		To determine that the applicant is knowledgeable in airspace classification.
		The applicant demonstrates understanding of:
		General airspace:
		Special-use airspace, such as prohibited, restricted, warning areas, military operation areas, alert areas, and controlled firing areas.
		Air Traffic Control (ATC)
		Task B. Airspace Operational Requirements



Private	Specific	Topics
		To determine that the applicant is knowledgeable of airspace operational requirements.
		The applicant demonstrates understanding of:
		Basic weather minimums.
		ATC authorizations and related operating limitations.
		Operations near airports.
		Potential flight hazards.
		a. Common aircraft accident causal factors
		b. Avoid flight beneath unmanned balloons
		c. Emergency airborne inspection of other aircraft
		d. Precipitation static
		e. Light amplification by stimulated emission of radiation (laser) operations and reporting illumination of aircraft
		f. Avoiding flight in the vicinity of thermal plumes such as smoke stacks and cooling towers
		g. Flying in the wire environment
		The NOTAM system, including how to obtain an established NOTAM through Flight Service.
		Operator equipment for night flight.
		Ground structures and ground structure lighting.
		Hazards on the ground that do not have lighting.
		Manned aircraft lighting.
		UAS lighting requirements.

## Weather


Private	Specific	Topics
		Task A. Sources of Weather
		To determine that the applicant is knowledgeable in sources of weather information.
		The applicant demonstrates understanding of:
		Internet weather briefing and sources of weather available for flight planning purposes.
		Aviation routine weather reports (METAR).
		Terminal aerodrome forecasts (TAF).



Private	Specific	Topics
		Weather charts.
		Automated surface observing systems (ASOS) and automated weather observing systems (AWOS).
Task B. Effects of Weather on Performance		
To determine that the applicant is knowledgeable of the effects of weather on performance.		
The applicant demonstrates understanding of:		
		Weather factors and their effects on performance.
		a. Density altitude
		b. Wind and currents
		c. Atmospheric stability, pressure, and temperature
		d. Air masses and fronts
		e. Thunderstorms and microbursts
		f. Tornadoes
		g. Icing
		h. Hail
		i. Fog
		j. Ceiling and visibility
		k. Lightning

### Loading and Performance

Private	Specific	Topics
Task A. Loading and Performance		
To determine that the applicant is knowledgeable in the loading and performance of an UAS.		
The applicant demonstrates understanding of:		
		General loading and performance, including:
		a. Effects of loading changes
		b. Balance, stability, and center of gravity
		Importance and use of performance data to calculate the effect on the aircraft's performance of an UAS.

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## Operations


Private	Specific	Topics
Task A. Radio Communications Procedures		
To determine that the applicant is knowledgeable in radio communication procedures.		
The applicant demonstrates understanding of:		
		Airport operations with and without an operating control tower.
		The description and use of a Common Traffic Advisory Frequency (CTAF) to monitor manned aircraft communications.
		Recommended traffic advisory procedures used by manned aircraft pilots such as self-announcing of position and intentions.
		Aeronautical advisory communication station (UNICOM) and associated communication procedures used by manned aircraft pilots.
		Automatic Terminal Information Service (ATIS).
		Aircraft call signs and registration numbers.
		The phonetic alphabet.
		Phraseology: altitudes, directions, speed, and time.
Task B. Airport Operations		
To determine that the applicant is knowledgeable in airport operations.		
The applicant demonstrates understanding of:		
		Types of airports such as towered, uncontrolled towered, heliport, and seaplane bases.
		ATC towers, such as ensuring the remote pilot can monitor and interpret ATC communications to improve situational awareness.
		Runway markings and signage.
		Traffic patterns used by manned aircraft pilots.
		Security Identification Display Areas (SIDA).
		Sources for airport data.
		a. Aeronautical charts
		b. Chart Supplements
		Avoiding bird and wildlife hazards and reporting collisions between aircraft and wildlife.
		Airport and seaplane base lighting.
Task C. Emergency Procedures		
To determine that the applicant is knowledgeable in UAS emergency procedures.		

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Private	Specific	Topics
The applicant demonstrates understanding of:		
		Emergency planning and communication.
		Characteristics and potential hazards of lithium batteries.
		a. Safe transportation such as proper inspection and handling
		b. Safe charging
		c. Safe usage
		d. Risks of fires involving lithium batteries
		Loss of aircraft control link and fly-aways.
		Loss of Global Positioning System (GPS) signal during flight and potential consequences.
		Frequency spectrums and associated limitations.
		Procedures for operations over people.
		Procedures for operations at night.
<b>Task D. Aeronautical Decision-Making</b>		
		To determine that the applicant is knowledgeable in aeronautical decision-making.
		The applicant demonstrates understanding of:
		Aeronautical decision-making (ADM).
		a. Effective team communication
		b. Task management
		Crew Resource Management (CRM).
		Situational awareness.
		Hazardous attitudes.
		Hazard identification and risk assessment.
<b>Task E. Physiology</b>		
To determine that the applicant is knowledgeable in the physiological factors affecting remote pilot performance.		
The applicant demonstrates understanding of:		
		Physiological considerations and their effects on safety such as dehydration and heatstroke.
		Drug and alcohol use.
		Prescription and over-the-counter medication.
		Hyperventilation.

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Private	Specific	Topics
		Stress and fatigue.
		Factors affecting vision.
		Fitness for flight.
		Physiological aspects of night operation.
		Night illusions.
<b>Task F. Maintenance and Inspection Procedures</b>		
To determine that the applicant is knowledgeable in UAS maintenance and inspection procedures.		
The applicant demonstrates understanding of:		
		Basic maintenance.
		Preflight inspection.
		Techniques to mitigate mechanical failures of all elements used in UAS operations such as the battery and any device(s) used to operate the UAS.
		Appropriate record keeping.
		Persons that may perform maintenance on an UAS.
		Preflight inspection for night operations.
		Manufacturer's Declaration of Compliance

### UAS Flight Competency Test:


Pre-flight planning procedures

Private	Specific	Topics
not applicable	applies	Plan a flight of at least 15 minutes duration simulating a normal operational UAS flight which shall, at a minimum, include one (1) take-off and one (1) full stop landing.

The UAS pilot operating --must be able to:

- Provide a satisfactory site survey;
- Brief flight crew or visual observers of any duties they are to perform or any other information relevant to the flight;
- Use appropriate and current aeronautical charts and other current flight publications;
- Properly identify airspace, obstructions, and terrain features;
- Select a safe and efficient take-off location and flight route;
- Obtain all pertinent information about local air routes and aerodromes;
- Retrieve and interpret weather information and NOTAM relevant to the intended flight;
- Determine the acceptability of existing or forecast weather conditions;
- Select the most favourable and appropriate altitudes, considering weather conditions and equipment limitations;
- Determine the appropriate departure procedure;
- Make a competent “GO/NO-GO” decision based on available information for the flight;

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- Demonstrate that the weights and center of gravity are within acceptable manufactures limits;
- Determine the impact on their UAS operations, of unavailability of equipment or equipment configuration changes for the proposed flight; and
- Organize and arrange material and equipment in a manner that makes the items readily available.

Emergency procedures

Private	Specific	Topics
not applicable	applies	Demonstrate the procedures to be used when an emergency occurs.

The UAS pilot operating --must be able to:

- Describe emergency procedures that apply to your UAS;
- Describe the lost-link procedures that apply to your UAS;
- Describe the procedures to follow in the event of a fly-away, including who to contact.

Perform a take-off

Private	Specific	Topics
not applicable	applies	Perform an organized and efficient safe departure

The UAS pilot operating --must be able to:

- Complete all pre-flight inspection/checks on your UAS;
- Note take-off time;
- Use an organized and efficient procedure to take off;
- Comply with all departure clearances and instructions if the flight review is conducted in controlled airspace; and
- Complete appropriate checklists.

Manual flight procedure


Private	Specific	Topics
not applicable	applies	Show the ability to manually control the UAS through various stages of flight.

The UAS pilot operating --must be able to:

- Maintain a stable airspeed, cruising altitude, and heading;
- Navigate by applying systematic navigation techniques;
- Orient the UAS to the direction of flight;
- Navigate around an obstacle or fixed point;
- Determine the position of the aircraft with respect to distance and altitude from the candidate;
- Apply an organized method that would:
  - verify the position of the aircraft
  - revise headings to correct any existing track error to maintain the aircraft's position due to wind
  - confirm or revise the battery power available at the destination landing point with a degree of accuracy that would make arrival assured
  - confirm current fuel/power levels vs requirements for the flight

Lost link procedures

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Private	Specific	Topics
not applicable	applies	Demonstrate verbally the procedures to be used when a lost link occurs.

The UAS pilot operating --must be able to:

- Correctly program the UAS for a “return to home” if it is equipped with that function;
- Select a power setting and altitude appropriate for the lost link situation;
- Promptly recognize when a lost link has occurred;
- Show an ability to regain control of the UAS if it reconnects the lost link;
- Take an appropriate course of action, once link has been re-established and confirmed;
- and
- Contact the appropriate facility to provide information on the lost link if needed.


“Fly away” procedures

Private	Specific	Topics
not applicable	applies	Verbally demonstrate the ability to perform all the needed actions relating to a “fly away” situation.

The UAS pilot operating --must be able to:

- Perform the following tasks without undue delay:
  - Identify and record their present position
  - Identify and record the direction and altitude the UAS was last seen travelling
  - Estimate the approximate available flight time that will remain with the fuel/power on board upon arrival at the destination (Example: 15 minutes)
- Without delay contact the appropriate facility to provide information on the “fly away” if needed.

Perform a landing

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## PART E — Fees

### UAS Related Fees

Serial No	UAS /Model aircraft	Registration Fees	Renewal Fees
<b>UAS Operations Category A/ Open (Includes Model Aircraft)</b>			
	Below 249 gm	Not Required	Not Required
	249 gm to 999 gm	1000.00 BDT	500.00 BDT
	1000 gm to 4999 gm	1500.00 BDT	1000.00 BDT
	5000- 25000 gm	5000.00 BDT	2000.00 BDT
	Owner Name/Information change	500.00 BDT	-
	Category Upgradation	Only the Specific Category fee	
<b>UAS Operations Category (B, C) Specific</b>			
	Below 250 gm	2000.00 BDT	1000.00 BDT
	250 gm to 999 gm	3000.00 BDT	1500.00 BDT
	1000 gm to 4999 gm	5,000.00 BDT	3,000.00 BDT
	5000 gm to 8000 gm	8,000.00 BDT	4,000.00 BDT
	8000 gm to 25000 gm	10,000.00 BDT	5,000.00 BDT
	Above 25000 gm (Includes Model Aircraft)	40,000.00 BDT	15,000.00 BDT
	Owner Name/Information change	1000.00 BDT	-
	Category Downgrades	According to Subclass of Open Category	
	Any UAS 5000 gm and above used for only agricultural purpose	4000.00 BDT	500.00 BDT

#### UAS Assessment Certificate (New Aircraft if Model is not available in the country)

Any Type of UAS	1000.00 BDT
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#### Logbook Fees

100 Pages	1000.00 BDT
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#### Exam & License Fee

Exam/Licence Type	Fees
UAS Pilot License (Private) Ground Exam	1000.00 BDT
UAS Pilot License (Specific) Ground Exam	2000.00 BDT
UAS Pilot License (Certified) Ground Exam	TBC later when option is open
Issuance of UAS Pilot License (Private)	1000.00 BDT
Issuance of UAS Pilot License (Specific)	2000.00 BDT
UAS Pilot License Validation (Private or equivalent)	500.00 BDT
UAS Pilot License Validation (Specific or equivalent)	1000.00 BDT
Flight Assessment (Practical Exam)	2000.00 BDT
UAS Pilot License Renewal (Any type)	800.00 BDT

#### UAS /Model aircraft Operation Fees

Flight Authorization/day in Yellow Zone up to 250 Feet	250.00 BDT
Flight Authorization/day in Yellow Zone up to 500 Feet	300.00 BDT
Flight Authorization/day in Yellow Zone up to 1000 Feet	500.00 BDT
Flight Authorization/day in Yellow Zone above 1000 Feet	1000.00 BDT
Flight Authorization/day within airport area (any height)	300.00 BDT
Change of Authorisation date	100.00 BDT

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Flight Authorization/day in Red Zone (any Height)	500.00 BDT
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**AOC/ ATO/AMO Fees**

	Issuance Fee	Renewal Fee
Issuance of UAS Operator Certificate	1,00,000.00	30,000.00
Issuance of UAS ATO/AMO	1,00,000.00	30,000.00

Note: No fees are required for any kind of flight authorisation for State operated UAS.

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## PART F —Forms

### UAS.Forms.010 Registration of UAS

Particulars Regarding The Applicant, Flight organization	
Name	
Address (Present)	
Address (Permanent)	
NID/ Passport/ Birth Certificate	
Email	
Contact Number (1)	
Contact Number (2)	
Name of Organization	

Particulars Regarding UAS	
Manufacturer	
Model	
Manufacturing Serial Number	
Configuration	
MTOW	
Remote Controller Range	
Color	
Max Airspeed	
Dimension	
Propulsion	
Payload	
Operational Limitation	
GPS	
IMU	
Flight Controller	
Camera Model	
Camera Resolution (Pixel)	
Camera Zoom (X)	
Radio Frequency	
UAS Total Hours (Refurbished)	
Purchased Date	
MoD Approved Letter Number	
MoD Approved Date	

Payment Details & Signature of the applicant	
Payment Reference Number & Details	
Compensation Plan (Compensation for the damage of others' live, property, confidentiality, etc. caused due to the drone flying)	

**Air Navigation Order (ANO) (DRAFT)**

CAAB Part 947

**CAAB PART 947**&  
Part 945

I, the undersigned, hereby declare that the UAS operation will comply with:

- any applicable rules related to privacy, data protection, liability, insurance, security and environmental protection;
- the applicable requirement of CAAB Regulations; and
- the limitations and conditions defined in the authorisation provided by the Civil Aviation Authority of Bangladesh
- I accept that if this application is withdrawn or refused by CAAB, or if CAAB are unable to assess the application because I have failed to provide the required information, I am liable to pay CAAB fees for work conducted.
- I have attached all required documentation specified in the application checklist.
- I acknowledge that to knowingly make a false or misleading statement in this application is an offence.

Date

Signature:


Name:

**FOR OFFICIAL USE ONLY**

Approval of Registration

Signature &amp; Date



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## UAS.Forms.020 Application Form for Operational Authorization of Flight (UAS Operations)

Particulars Regarding The Applicant, Flight organization & Remote Pilot		
Name		
Address		
NID/ Passport/ Birth Certificate		
Email		
Contact Number		
Name of Organization		
ROC Number		
Particulars Regarding Remote Pilot		
Remote Pilot Name (PIC)		
Remote Pilot Contact Details (PIC)		
Remote Pilot License (PIC)	RPL(Private)	RPL(Specific)
Total Flying Hour (PIC)		
Total Flying hour on type to be flown (PIC)		

Particulars Regarding UAS		
--	UAS 1	UAS 2
Manufacturer		
Model		
Registration Number		
Configuration		
MTOM		
Max Airspeed		
Dimension		
Propulsion		
Payload		
Operational Limitation		
Navigation & tracking System		
Flight Management System		


Details of Flight & Flight Geography										
Location-Waypoints	Date	Start Time	End Time	Endurance	Number of Flight	UAS Model	Flight Geography	Flight Zone	Altitude	Take-off Coordinate

Operation		
Geographic Characteristics of the flown area		
Type of operation	Entertainment	Specific
Concept of Operation		
Objectives		
Flight Modes		
Operation Procedure		
Emergency Procedure		
Nearest police station		
Contact details of Nearest Police station		
Nearest Airport		

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What is the distance (in NM) from aerodrome reference point	
operational risk assessment in accordance with UAS.ANO.11	
Mitigations and operational safety objectives (OSO)	

Waiver/ Exemption	
Categories of Waiver	Waiver Requesting For
<ol style="list-style-type: none"> <li>1. Operations from a moving vehicle or aircraft</li> <li>2. Night operation</li> <li>3. Visual line of sight aircraft operation</li> <li>4. Visual observer</li> <li>5. Operation of multiple small unmanned aircraft</li> <li>6. Operation near aircraft</li> <li>7. Operation over people</li> <li>8. Operating limitations: ground speed</li> <li>9. Operating limitations: altitude</li> <li>10. Operating limitations: minimum visibility</li> <li>11. Operating limitations: minimum distance from clouds</li> </ol>	
<b>UAS</b>	
What kind of termination system, if any, does the UAS have?	
What, if any, external or internal load (or object) could be dropped from the aircraft when flying, and how will you assure the safety of people, or other people's property, if it is dropped or detached when flying?	
<b>Remote PIC</b>	
What minimum level of experience will the Remote Pilot in Command (Remote PIC) have to fly under this waiver?	
How many personnel (including the Remote PIC) will you use for operations under this waiver (minimum needed)?	
What kind of training, if any, will personnel (e.g. visual observer(s)) have prior to flying under the waiver?	
How will the personnel be trained?	
How will the Responsible Person know the other personnel are competent and have operational knowledge to safely fly the UAS under the waiver conditions?	
If personnel will be tested, what kind of testing will be performed, and how will evaluations be conducted and documented?	
How will personnel maintain the knowledge/skill to fly under this waiver? Will recurrent training or testing be required?	
<b>Describe Operational Risks &amp; Mitigations</b>	
Provide, to the greatest extent possible, how you propose to address or lessen the possible risks of your proposed operation. This could include using operating limitations, technology, additional training, equipment, personnel, restricted access areas, etc. When reviewing the questions for each section below, the primary concerns are:	

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How you will ensure your operation(s) remains safe at all times, even in unusual circumstances.
What kinds of circumstances could arise, and how you plan to handle each.
How do you ensure the aircraft only flies where it is directed (i.e. ensure containment)?

*Waiver must be based on mission objectives and need bases. Application must includes the risk assessment and the supporting documents to establish the justification of waiver. Applications are included with time limits, not responding in time limit require resubmit application.*

*Failure to adhere to the terms of the waiver may result in a violation of the regulation being waived.. It is responsibility as an applicant to identify operational risks and mitigations for those risks to ensure you are flying safely.*


*If waiver application does not identify operational hazards and propose risk mitigation strategies, it is not be possible to make a complete safety analysis and will disapprove application based on insufficient information that was provided with application.*

Attached Documents	
	Updated UAS operations manual is attached
	Risk assessment is attached
	Hazard Mitigation is attached
	Operational Checklist is attached
	Map(s) of the operational area is attached
	Flight plan is attached
	CONOPS is attached

Payment Details & Signature of the applicant	
Payment Reference Number & Details	
I, the undersigned, hereby declare that the UAS operation will comply with:	
— any applicable rules related to privacy, data protection, liability, insurance, security and environmental protection;	
— the applicable requirement of CAAB Regulations; and	
— the limitations and conditions defined in the authorisation provided by the Civil Aviation Authority of Bangladesh	
— I accept that if this application is withdrawn or refused by CAAB, or if CAAB are unable to assess the application because I have failed to provide the required information, I am liable to pay CAAB fees for work conducted.	
— I have attached all required documentation specified in the application checklist.	
— I acknowledge that to knowingly make a false or misleading statement in this application is an offence.	
Date	Signature-

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Approval of Authorization (With applicable Limitations)	Signature & Date
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**Instructions for filling in the form:**

1. The UAS operator registration number in accordance with UAS.ANO.14 of the UAS Regulation.
2. The name of the accountable manager or the name of the UAS operator in the case of a natural person;
3. The name of the manufacturer of the UAS;
4. The model of the UAS as defined by the manufacturer;
5. The serial number of the UA defined by the manufacturer, or the registration mark for the UA requiring registration according to UAS.ANO.14 of the UAS Regulation;
6. The configuration of the UA; Aeroplance /Helicopter/ Multirotor/ Hybrid/ VTOL Lighter than air/ Other
7. The maximum take-off mass for which the UA is designed, expressed in kg;
8. The maximum cruise air speed expressed in m/s and knots in parenthesis;
9. State the maximum dimensions of the UA in metres (e.g. for aeroplanes: the length of the wingspan; for helicopters: the diameter of the propellers; for multirotor: the maximum distance between the tips of 2 opposite propellers);
10. Indicate the manufacturer and model of the flight controller. Describe the relevant aspects affecting flight safety.
11. Mark the type of propulsion used, indicating (in the space provided) the manufacturer and model, and detailing relevant information such as the number of motors/engines, the configuration, etc. Powerplant design diagrams may be attached if necessary.
12. Describe each of the different payload configurations that affect the mission or that, without changing it, impact the weight and balance, the electrical charge or the flight dynamics. Include all relevant technical details. If needed, you may use other documents that provide the specified details.
- 13.
14. Describe the flight modes (i.e. manual, artificial stability with controller, automatic, autonomous). For each flight mode, describe the variable that controls the aircraft: increments in position, speed control, attitude control, type of altitude control (which sensor is used for this purpose), etc.
15. The description of the intended operation characterizing the area where it will take place (i.e.
16. Assessed Risk by risk assessment Matrix.

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17. A list of the mitigation measures and the OSOs put in place, as required by the PDRA or proposed by the UAS operator if no PDRA is available. Sufficient information shall be provided to CAAB to assess the robustness of the measures.
18. A short description of the procedures established by the UAS operator to ensure that all operations are in compliance with on the protection on personal data as required by point UAS. SPECIFIC.050(1)(a)iv.
19. Entertainment /Videography /Photography /Survey /Others (Specify)
20. Note: The signature and stamp may be provided in electronic form.


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## UAS.Forms.030 Application Form for Incident/ Occurrences/ Accident Report

Incident/ Occurrence or accident Reporting Form	
Reporter / Remote PIC Name	
Email	
Contact Number (1)	
Contact Number (2)	
Flight Organization of Remote PIC	
UAS Registration Number	
UAS Configuration	
UAS Marking/ Colors	
Location of Accident/ Incident / Occurrences	
Flight Information & trajectories	
Geographic Coordinates of the Area	
UAS Registration Number	
Max & Lost link battery time	
Flown Air Speed & Wind Direction	
Meteorological Condition	
Type of Accident/ Incident/ Occurrences	It was flying close to an object; It was flying close to people; It flew over the top of me; It was flying near an airport; It was flying near a helicopter/ Airplane; It was flying at night or in fog; I don't think the person flying the drone could see it; The drone was flying too high (above 100 feet); Taking photos of people; It was noisy; UAS Lost in Flying, Aerobatic Maneuvering If Other mention
Date of the Accident/ Incident/ Occurrences	
Time of the Accident/ Incident/ Occurrences	
Person(s) injured and extent of injury	
Property damaged and extent of damage, if any or known	
Description of what happened	
Witness Statement	

Attached Evidences	

Acknowledgements	
<p>— I acknowledge that to knowingly make a false or misleading statement in this application is an offence.</p>	
Date	Signature-

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## UAS.Forms.040 Application Form for Remote Pilot License

Particulars Regarding The Applicant, Flight organization & Remote Pilot	
Name	
Address (Present)	
Address (Permanent)	
NID/ Passport/ Birth Certificate	
Email	
Contact Number (1)	
Contact Number (2)	
Name of Flight Organization	
Name o ATO	
Date of Birth	

Remote Pilot Exam	
Theoretical Competency Test Mark	
Practical Competency Test Mark	
Class 2 Medical Certificate (Specific & Certified)	

Payment Details & Signature of the applicant	
Payment Reference Number & Details	
Date	Signature-

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Approval of Registration	Signature & Date

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## UAS.Forms.050 Application Form for Registration of Remote Operator Certificate

Particulars Regarding The Applicant, Flight organization & Remote Pilot	
Name of Organization	
Address (Present)	
Address (Permanent)	
NID/ Passport/ Birth Certificate	
Email	
Contact Number (1)	
Contact Number (2)	
Authorized Representative Name	
Designation of the Authorized Representative	
Contact Number (1)	
Type of Operation	
Method of control and supervision of operations to be used	
Notification of management change (Text Box)	

Attached Documents for ROC & ATOs	
	Application
	Trade License
	Operation Manual
	Safety management manual
	Concept of operations
	Procedure for Risk Management & Mitigation
	Concept of Operations
Attached Documents for Applicable for ATOs	Training Syllabus Containing Course Content
	Course Curriculum includes Lesson Plan
	Student Record Keeping Procedure

Payment Details & Signature of the applicant	
Payment Reference Number & Details	
<p>I, the undersigned, hereby declare that the UAS operation will comply with:</p> <ul style="list-style-type: none"> <li>— any applicable rules related to privacy, data protection, liability, insurance, security and environmental protection;</li> <li>— the applicable requirement of CAAB Regulations; and</li> <li>— the limitations and conditions defined in the authorisation provided by the Civil Aviation Authority of Bangladesh</li> <li>— I accept that if this application is withdrawn or refused by CAAB, or if CAAB are unable to assess the application because I have failed to provide the required information, I am liable to pay CAAB fees for work conducted.</li> <li>— I have attached all required documentation specified in the application checklist.</li> <li>— I acknowledge that to knowingly make a false or misleading statement in this application is an offence.</li> </ul>	
Date	Signature-





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**To be filled up By CAAB**

the UAS operator identification;

the UAS operator's privileges;

authorized type(s) of operation;

the authorized area, zone or class of airspace for operations;


any special limitations or conditions

Waiver

**FOR OFFICIAL USE ONLY**

Approval of Authorization (With applicable Limitations)

Signature & Date


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## UAS.Forms.051 Application Form for ROC Operational Authorization

<b>UAS operator data</b>	
UAS operator registration number	
UAS operator name	
Operational point of contact Name Mobile Email	
Authorisation number	
<b>Data of authorised UAS</b>	
Manufacturer	
Model	
Registration Number	
<b>Limitations and conditions for the UAS operation</b>	
Authorised location(s)	
Authorised airspace risk level	
Operational limitations	
Mitigation measures	
Remote pilot competency	
Competency of other staff essential for the safety of the operation	
Records to be kept	
Type of events to be reported to CAAB according to	
Duration of the authorisation	
The..... is authorised to conduct UAS operations with the UAs defined and according to the conditions and limitations defined, as long as it complies with this authorisation,.	
Date, signature and stamp	

### Instructions for filling in the form

1. Name of the State of the UAS operator.
2. Identification of the issuing competent authority.
3. Contact data of the person responsible for issuing the authorisation.
4. Registration information of the UAS operator in accordance with UAS.ANO.14 of the UAS Regulation.
5. UAS operator's registered name and last name or, in the case of a legal entity, the business name.

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6. The contact details include the telephone and fax numbers, including the country code, and the email address at which the accountable manager and the safety manager can be contacted without undue delay.
7. Reference number, as issued by the competent authority.
8. Name of the manufacturer of the UAS.
9. Model of the UAS as defined by the manufacturer.
10. Serial number of the UA defined by the manufacturer or registration mark for the UA requiring registration according to UAS.ANO.14 of the UAS Regulation
11. Locations where the operation has been authorised, based on the adaptation of mitigation measures.
12. Characterisation of the authorised airspace
13. List the operational limitation including at least:
  1. the maximum height;
  2. limitations on the payload;
  3. limitations on the operations (i.e. the possibility to handover during the flight);
  4. the minimum contents of the OM;
  5. the methodology to verify the operational procedures;
  6. the need for an emergency response plan;
  7. the maintenance requirements; and
  8. the record-keeping requirements.

List the mitigation measures including at least protection of a third party on the ground (including the definition of a specific authorised flight path, if applicable).

- 1 The minimum competency required for the remote pilot and the methodology to assess it.
- 2 The minimum competency required for the staff essential for the operation (i.e. maintenance staff, the launch and recovery assistant, UA VO, etc.) and the methodology to assess it.


Note: The signature and stamp may be provided in electronic form.

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**UAS.Forms.052 Form For The Terms of Approval of an ROC Holder**

<b>UAS OPERATOR CERTIFICATE (ROC)</b> (Terms of approval of an ROC holder)		
(3)	State of the operator (1):	(3)
	Issuing competent authority(2):	
ROC # (4):	Operator name (5):	
	Registration number of the UAS operator (6): Operator address (8): Telephone (9): Email (10):	Contact details, at which operational management can be contacted without undue delay (7):
This certificate certifies that .....(5) is authorised to perform UAS operations, as defined in the attached UAS operations specifications, in accordance with the ROC manual, with the CAAB Regulation to “-----”.		
Date of issue (11):_____	Name and signature (12):_____	
	Title: _____	


1. Enter the name of the State of the operator.
2. Enter the identification of the issuing competent authority.
3. Reserved for use of the competent authority.
4. Enter the approval reference (digital and/or letter code) of the ROC, as issued by the competent authority.
5. Enter the name of the legal entity of the UAS operator and UAS operator’s trading name, if different from the name of the legal entity.
6. Enter the registration number of the UAS operator, provided according to UAS.ANO.14 of the UAS Regulation.
7. Enter contact details such as the telephone numbers, including the country code, and the email address at which operational management can be contacted without undue delay for issues related to UAS operations, the airworthiness of UAS, remote crew competency and other matters as appropriate.
8. Enter the UAS operator’s principal place of business address, business telephone details, including the country code, e UAS operator’s email.
9. Enter the issue date of the ROC (dd-mm-yyyy).
10. Enter the title, name and signature of CAAB representative. In addition, an official stamp may be applied on the ROC.

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## UAS.Forms.053 Form For The UAS Operations Specification


<b>UAS OPERATIONS SPECIFICATIONS</b>			
ROC <sup>(1)</sup> :			
Operator name & Identification <sup>(2)</sup> :			
The UAS operator <sup>(2)</sup> _____ has the privilege to _____ <sup>(3)</sup> , subject to the following:			
UAS model <sup>(4)</sup> : _____; UAS serial number or registration mark <sup>(5)</sup> : _____			
Type(s) of UAS operation <sup>(6)</sup> or :	Specifications <sup>(7)</sup> :	Special limitations <sup>(8)</sup> :	Remarks <sup>(9)</sup>
1. _____;			
2. _____;			
Issuing CAAB <sup>(10)</sup> :			
Telephone <sup>(11)</sup> :			
Email <sup>(12)</sup> :			
Date <sup>(13)</sup> :			
Signature <sup>(14)</sup> :			

1. Enter the approval reference (digital and/or letter code) of the ROC, as issued by the competent authority.
2. Enter the name of the legal entity of the UAS operator and UAS operator's trading name, if different from the name of the legal entity/ natural name. Identification is NID (for Bangladeshi Citizen), Passport (for non-Bangladeshi nationals), and Birth Certificate for citizen age below 18
3. Enter any privilege listed in AMC1 UAS.ROC.060 that has been granted.
4. Enter the UAS model.
5. Enter the UAS serial number or the UAS registration mark if applicable.
6. Specify the type(s) of UAS operation (e.g. STS, PDRA when applicable, or type of UAS operations in case the operation is not covered by an STS or a PDRA; the type of UAS operation may be: survey, linear inspection, urban delivery; agricultural, photography, advertising, calibration, construction work, stringing power line, aerial mapping, pollution control, news media, television and movie, flying display, competition, etc.).
7. Enter the relevant specifications describing where the operation is allowed to take place (area of operation or class of airspace for operations; maximum height, BVLOS/VLOS; range; etc.).
8. Enter the limitations related to: restriction of the ground area (i.e. controlled ground area, population density; ground risk buffer); the UAS performance and equipment (i.e. maximum speed; maximum

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weight etc.); data link or communications; external systems or loads; carriage of dangerous goods, possibility of handover, etc.

9. Enter remarks such as the remote pilot's competency; normal, contingency and emergency procedures.
10. Enter the identification of the issuing competent authority.
11. Enter the telephone number of the competent authority, including the country code.
12. Enter the email address of the competent authority.
13. Issue date of the operations specifications (dd-mm-yyyy).
14. Signature of CAAB representative.

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## AMC1 UAS.SPECIFIC.030(3)(e) Application for an operational authorisation

### OPERATIONS MANUAL — TEMPLATE

In accordance with UAS.SPECIFIC.030(3)(e), the OM shall contain:

1. Cover and contact –
  1. Cover identifying the UAS operator with the title ‘Operations Manual’, contact information and OM revision number.
  2. Table of contents.
  
1. Introduction
  1. Definitions, acronyms and abbreviations.
  2. System for amendment and revision of the OM (list the changes that require prior approval and the changes to be notified to the competent authority).
  3. Record of revisions with effectivity dates.
  4. List of effective pages (list of effective pages unless the entire manual is re-issued and the manual has an effective date on it).
  5. Purpose and scope of the OM with a brief description of the different parts of the documents.
  6. Safety statement (include a statement that the OM complies with the relevant CAAB requirements and with the authorisation or the terms of approval of the light UAS operator certificate (ROC), in the case of a ROC holder, and contains instructions that are to be complied with by the personnel involved in flight operations).
  7. Approval signature (the accountable manager must sign this statement).
  
2. **Description of the UAS operator’s organisation** (include the organigram and a brief description thereof).
  
3. **Concept of operations (ConOps)** For each operation, please describe the following:
  1. Nature of the operation and associated risks (describe the nature of the activities performed and the associated risks).
  2. Operational environment and geographical area for the intended operations (in general terms, describe the characteristics of the area to be overflown, its topography, obstacles etc., and the characteristics of the airspace to be used, and the environmental conditions (i.e. the weather and electromagnetic environment); the definition of the required operation volume and risk buffers to address the ground and air risks).


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3. Technical means used (in general terms, describe their main characteristics, performance and limitations, including UAS, external systems supporting the UAS operation, facilities, etc.)
  4. Competency, duties and responsibilities of personnel involved in the operations such as the remote pilot, UA observer, visual observer (VO), supervisor, controller, operations manager, etc. (initial qualifications; experience in operating UAS; experience in the particular operation; training and checking; compliance with the applicable regulations and guidance to crew members concerning health, fitness for duty and fatigue; guidance to staff on how to facilitate inspections by CAAB personnel).
  5. Risk analysis and methods for reduction of identified risks (description of methodology used; bow-tie presentation or other).
  6. Maintenance (provide maintenance instructions required to keep the UAS in a safe condition, covering the UAS manufacturer's maintenance instructions and requirements when applicable).
4. Normal procedures;  
(The UAS operator shall complete the following paragraphs considering the elements listed below. The procedures applicable to all UAS operations may be listed in paragraph 4.1.)
    1. General procedures valid for all operations
    2. Procedures peculiar to a single operation
  5. Contingency procedures  
(The UAS operator shall complete the following paragraphs considering the elements listed below. The procedures applicable to all UAS operations may be listed in paragraph 5.1).
    1. General procedures valid for all operations
    2. Procedures peculiar to a single operation
  6. Emergency procedures  
(The UAS operator shall define procedures to cope with emergency situations.)
  7. Emergency response plan (ERP) (optional)
  8. Security (security procedures referred to in UAS.SPECIFIC.050(a)(ii) and (iii); instructions, guidance, procedures, and responsibilities on how to implement security requirements and protect the UAS from unauthorised modification, interference, etc.]
  9. Guidelines to minimize nuisance and environmental impact referred to in UAS. SPECIFIC. 050 (a)(v) ;
    1. Occurrence reporting procedures.
    2. Record-keeping procedures (instructions on logs and records of pilots and other data considered useful for the tracking and monitoring of the activity).

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## AMC1 UAS.SPECIFIC.030(3)(e) Application for an operational authorisation

### OPERATIONS MANUAL — TEMPLATE


A non-exhaustive list of topics to be considered by the UAS operator when compiling some chapters of the OM is provided below:

1. System for amendment and revision of the OM
  1. A description of the system for indicating changes and of the methodology for recording effective pages and effectivity dates; and
  2. Details of the person(s) responsible for the revisions and their publication.
2. Description of the UAS operator's organization
  1. The organisational structure and designated individuals. Description of the operator's organisational structure, including an organisational chart showing the different departments, if any (e.g. flight/ground operations, operational safety, maintenance, training, etc.) and the head of each department;
  2. Duties and responsibilities of the management personnel; and
  3. Duties and responsibilities of remote pilots and other members of the organisation involved in the operations (e.g. payload operator, ground assistant, maintenance technician, etc.).
3. Competency, duties and responsibilities of personnel involved in the operations such as the remote pilot, UA observer, VO, supervisor, controller, operations manager etc.
  1. Theoretical, practical (and medical) requirements for operating UAS in compliance with the applicable regulation;
  2. Training and check programme for the personnel in charge of the preparation and/or performance of the UAS operations, as well as for the VOs, when applicable;
  3. Training and refresher training records; and
  4. Precautions and guidelines involving the health of the personnel, including precautions pertaining to environmental conditions in the area of operation (policy on consumption of alcohol, narcotics and drugs, sleep aids and anti-depressants, medication and vaccination, fatigue, flight and duty period limitations, stress and rest, etc.).
4. General procedures valid for all operations:
  1. Consideration of the following to minimise human errors:
    1. a clear distribution and assignment of tasks; and
    2. an internal checklist to check that staff are properly performing their assigned tasks.

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2. Consideration of the deterioration of external systems supporting the UAS operation; in order to assist in the identification of procedures related to the deterioration of external systems supporting the UAS operation, it is recommended to:
  1. identify the external systems supporting the operation;
  2. describe the deterioration modes of these external systems which would prevent the operator maintaining a safe operation of the UAS (e.g. complete loss of GNSS, drift of the GNSS, latency issues, etc.);
  3. describe the means put in place to detect the deterioration modes of the external systems; and
  4. describe the procedure(s) in place once a deterioration mode of one of the external systems is detected (e.g. activation of the emergency recovery capability, switch to manual control, etc.).
3. Coordination between the remote pilot(s) and other personnel;
4. Methods to exercise operational control; and
5. Pre-flight preparation and checklists. These include, but are not limited to, the following points:
  1. The site of the operation
    1. the assessment of the area of operation and the surrounding area, including, for example, the terrain and potential obstacles and obstructions for keeping a VLOS of the UA, potential overflight of uninvolved persons, potential overflight of critical infrastructure (a risk assessment of the critical infrastructure shall be performed in cooperation with the responsible organisation for the infrastructure, as they are most knowledgeable of the threats)
    2. the assessment of the surrounding environment and airspace, including, for example, the proximity of restricted zones and potential activities by other airspace users;
    3. when UA VOs are used, the assessment of the compliance between visibility and planned range, the potential terrain obstruction, and the potential gaps between the zones covered by each of the UA VOs; and
    4. the class of airspace and other aircraft operations (local aerodromes or operating sites, restrictions, permissions).
  2. Environmental and weather conditions:
    1. environmental and weather conditions adequate to conduct the UAS operation; and
    2. methods of obtaining weather forecasts.


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3. Coordination with third parties, if applicable (e.g. requests for additional permits from various agencies and the military when operating, for example, in environmentally protected areas, areas restricted to photographic flights, near critical infrastructure, in urban areas, emergency situations, etc.);
  4. the minimum number of crew members required to perform the operation, and their responsibilities;
  5. the required communication procedures between the personnel in charge of duties essential to the UAS operation, and with external parties when needed;
  6. compliance with any specific requirement from the relevant authorities in the intended area of operations, including those related to security, privacy, data and environmental protection, use of the RF spectrum; also considering cross-border operations (specific local requirements) when applicable;
  7. the required risk mitigations put in place to ensure the operation is safely conducted (e.g. a controlled ground area, securing the controlled ground area to avoid third parties entering the area during the operation, and ensuring coordination with the local authorities when needed, etc.); and
  8. procedures to verify that the UAS is in a condition to safely conduct the intended operation (e.g. update of geographical zones data for geo-awareness or geofencing systems; definition and upload of lost link contingency automatic procedures; battery status, loading and securing the payload;).
6. Launch and recovery procedures;
  7. In-flight procedures (operating instructions for the UA (reference to or duplication of information from the manufacturer’s manual); instructions on how to keep the UA within the flight geography, how to determine the best flight route; obstacles in the area, height; congested environments, keeping the UA in the planned volume);
  8. Post-flight procedures, including the inspections to verify the condition of the UAS;
  9. Procedures for the detection of potentially conflicting aircraft by the remote pilot and, when required by the UAS operator, UA VOs; and
  10. Dangerous goods (limitations on their nature, quantity and packaging; acceptance prior to loading, inspecting packages for any evidence of leakage or damage).
5. Procedures peculiar to a single operation:
    1. Procedures to cope with the UA leaving the desired ‘flight geography’;
    2. Procedures to cope with the UA entering the ‘containment’ volume;
    3. Procedures to cope with uninvolved persons entering the controlled ground area, if applicable;
    4. Procedures to cope with adverse operating conditions (e.g. in case icing is encountered during the operation, if the operation is not approved for icing conditions);

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5. Procedures to cope with the deterioration of external systems supporting the operation. In order to help properly identify the procedures related to the deterioration of external systems supporting the UAS operation, it is recommended to:
  1. identify the external systems supporting the operation;
  2. describe the deterioration modes of these external systems which would prevent the operator maintaining a safe operation of the UAS (e.g. complete loss of GNSS, drift of the GNSS, latency issues, etc.);
  3. describe the means put in place to detect the deterioration modes of the external systems; and
  4. describe the procedure(s) in place once a deterioration mode of one of the external systems is detected (e.g. activation of the emergency recovery capability, switch to manual control, etc.).
6. De-confliction scheme (i.e. the criteria that will be applied for the decision to avoid incoming traffic). In cases where the detection is performed by UA VOs, the phraseology to be used.
6. Emergency procedures:
  1. Procedures to avoid or, at least minimise, harm to third parties in the air or on the ground. With regard to the air risk, an avoidance strategy to minimise the collision risk with another airspace user (in particular, an aircraft with people on board); and
  2. Procedures for the emergency recovery of the UA (e.g. landing immediately, termination of the flight with FTS or a controlled crash/splash, etc.).
7. Emergency response plan (ERP). When the UAS operator develops an ERP, the following shall be considered:
  1. it is expected to cover:
    1. the plan to limit crash-escalating effects (e.g. notify the emergency services and other relevant authorities); and
    2. the conditions to alert ATM.
  2. it is suitable for the situation;
  3. it limits the escalating effects;
  4. it defines criteria to identify an emergency situation;
  5. it is practical to use;
  6. it clearly delineates the responsibilities of the personnel in charge of duties essential to the UAS operation;

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7. it is developed to standards considered adequate by CAAB and/or in accordance with means of compliance acceptable to that authority; and
8. when considered appropriate by the competent authority, to be validated through a representative tabletop exercise consistent with the ERP training syllabus.

**PART G — Explanatory AMC & GM**

**AMC1 947.11 Rules for conducting an operational risk assessment**

**CONOPS: GUIDELINES ON COLLECTING AND PRESENTING SYSTEM AND OPERATIONAL INFORMATION FOR SPECIFIC UAS OPERATIONS**

1. General guidelines

This document must be original work completed and understood by the applicant (operator). Applicants must take responsibility for their own safety cases, whether the material originates from this template or otherwise.

1. Document control

Applicants should include an amendment record at the beginning of the document to record changes and show how that the document is controlled.

Amendment/ Revision/ Issue Number	Date	Amended by	Signed
a, b, c or 1, 2, 3 etc.	DDMMYY YYY	Name of the person carrying out the amendment/ revision/ issue number	Signature of person carrying out the amendment/ revision/ issue number

This section is critical to ensure appropriate document control.

Any significant changes to the ConOps may require further assessment and approval by the competent authority prior to further operations being conducted.

2. References


1. List all references (documents, URL, manuals, appendices) mentioned in the ConOps:

#	Title	Description	Amendment/ Revision/ Issue Number
[1]			
[2]			

2. Guidance for the collection and presentation of operationally relevant information

The template below provides section headings detailing the subject areas that should be addressed when producing the ConOps, for the purposes of demonstrating that a UAS operation can be conducted safely. The template layouts as presented are not prescriptive, but the subject areas detailed should be included in the ConOps documentation as required for the particular operation(s), in order to provide the minimum required information and evidence to perform the SORA.

1. Reserved

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## 2. Organisation overview

1. This section describes how the organisation is defined, to support safe operations. It should include:
  1. the structure of the organisation and its management, and
  2. the responsibilities and duties of the UAS operator.

### 1. Safety

1. The ‘specific’ category covers operations where the operational risks are higher and therefore the management of safety is particularly important. The applicant should describe how safety is integrated in the organisation, and the safety management system that is in place, if applicable.
2. Any additional safety-related information should be provided.

### 2. Design and production

1. If the organisation is responsible for the design and/or production of the UAS, this section should describe the design and/or the production organisation.
2. It should provide information on the manufacturer of the UAS to be used if the UAS is not manufactured or produced by the operator, i.e. by a third-party manufacturer.
3. If required, information on the production organisation of the third-party organisation should be provided as evidence.

### 3. Training of staff involved in operations

This section should describe the training organisation or entity that qualifies all the staff involved in operations with respect to the ConOps.

### 4. Maintenance

This section should describe:

1. the general maintenance philosophy of the UAS;
2. the maintenance procedures for the UAS; and
3. the maintenance organisation, if required.

### 5. Crew

This section should describe:

1. the responsibilities and duties of personnel, including all the positions and people involved, for functions such as:
  1. the remote pilot (including the composition of the flight team according to the nature of the operation, its complexity, the type of UAS, etc.); and
  2. support personnel (e.g. visual observers (VOs), launch crew, and recovery crew);
2. the procedure for multi-crew coordination if more than one person is directly involved in the flight operations;
3. the operation of different types of UAS, including details of any limitations to the types of UAS that a remote pilot may operate, if appropriate; and

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4. details of the operator’s policy on crew health requirements, including any procedures, guidance or references to ensure that the flight team are appropriately fit, capable and able to conduct the planned operations.
  6. UAS configuration management  
This section should describe how the operator manages changes to the UAS configuration.
  7. Other position(s) and other information  
Any other position defined in the organisation, or any other relevant information, should be provided.
3. Operations
1. **Type of operations**
    1. Detailed description of the ConOps: the applicant should describe what types of operations the UAS operator intends to carry out. The detailed description should contain all the information needed to obtain a detailed understanding of how, where and under which limitations or conditions the operations shall be performed. The operational volume, including the ground and air risk buffers, needs to be clearly defined. Relevant charts/diagrams, and any other information helpful to visualise and understand the intended operation(s) should be included in this section.
    2. The applicant should provide specific details on the type of operations (e.g. VLOS, BVLOS), the population density to be overflown (e.g. away from people, sparsely populated, assemblies of people) and the type of airspace to be used (e.g. a segregated area, fully integrated).
    3. The applicant should describe the level of involvement (LoI) of the crew and any automated or autonomous systems during each phase of the flight.
  2. Normal operation strategy
    1. The normal operation strategy should contain all the safety measures, such as technical or procedural measures, crew training, etc. that are put in place to ensure that the UAS can fulfil the operation within the approved limitations, and so that the operation remains in control.
    2. Within this section, it should be assumed that all systems are working normally and as intended.
    3. The intent of this chapter is to provide a clear understanding of how the operation takes place within the approved technical, environmental, and procedural limitations.
  3. Standard operating procedures  
This section should describe the standard operating procedures (SOP) applicable to all operations for which an approval is requested. A reference to the applicable operations manual (OM) is acceptable. Note: Checklists and SOP templates may be provided by the local competent authority or a qualified entity.
    1. Normal operating procedures  
This section should describe the normal operating procedures in place for the intended operations.
    2. Contingency and emergency procedures





This section should describe the contingency procedures in place for any malfunction or abnormal operation, as well as an emergency.

**3. Occurrence reporting procedures**

UAS, like all aircraft, are subject to accident investigations and occurrence reporting schemes. Mandatory or voluntary reporting should be carried out using the reporting processes provided by the competent authorities. As a minimum, the SOP should contain:

1. reporting procedures in case of:
  1. damage to property;
  2. a collision with another aircraft; or
  3. a serious or fatal injury (third parties and own personnel); and
2. documentation and data logging procedures: describe how records and information are stored and made available, if required, to the accident investigation body, competent authority, and other government entities (e.g. police) as applicable.

**4. Operational limits**

This section should detail the specific operating limitations and conditions appropriate to the proposed operation(s); for example, operating heights, horizontal distances, weather conditions, the applicable flight performance envelope, times of operations (day and/or night) and any limitations for operating within the applicable class(es) of airspace, etc.

**5. Emergency response plan (ERP)**

The applicant should:

1. define a response plan for use in the event of a loss of control of the operation;
2. describe the procedures to limit the escalating effects of a crash; and
3. describe the procedures for use in the event of a loss of containment.

**4. Remote crew training**

**1. General information**

This section describes the processes and procedures that the UAS operator uses to develop and maintain the necessary competence for the remote crew (i.e. any person involved in the UAS operation).

**2. Initial training and qualification**

This section describes the processes and procedures that the UAS operator uses to ensure that the remote crew is suitably competent, and how the qualification of the remote crew is carried out.

**3. Procedures for maintenance of currency**

This section describes the processes and procedures that the UAS operator uses to ensure that the remote crew acquire and maintain the required currency to execute the various types of duties.

**4. Flight simulation training devices (FSTDs)**

This section:



1. describes the use of FSTDs for acquiring and maintaining the practical skills of the remote pilots (if applicable); and
2. describes the conditions and restrictions in connection with such training (if applicable).

**5. Training programme**

This section provides a reference to the applicable training programme(s) for the remote crew.

**3. Guidance for the collection and presentation of technical relevant information**

The aim of this section is to collect all the necessary technical information about the UAS and its supporting systems. This information needs to be sufficient to address the required robustness levels of the mitigations and the OSOs of the SORA.

The list below is suggested guidance for items which may be relevant for this assessment, but the items may differ, depending on the specific UAS utilised in this ConOps.

**1. Reserved**

**2. UAS description**

**1. Unmanned aircraft (UA) segment**

**1. Airframe**

This section should include the following:

1. A detailed description of the physical characteristics of the UA (mass, centre-of-mass, dimensions, etc.), including photos, diagrams and schematics, if appropriate to support the description of the UA.
  1. Dimensions: for fixed-wing UA, the wingspan, fuselage length, body diameter etc.; for a rotorcraft, the length, width and height, propeller diameter, etc.;
  2. Mass: all the relevant masses such as the empty mass, MTOM, etc.; and
  3. Centre of gravity: the centre of gravity and limits if necessary.
2. Materials: the main materials used and where they are used in the UA, highlighting in particular any new materials (new metal alloys or composites) or combinations of materials (composites ‘tailored’ to designs).
3. Load limits: the capability of the airframe structure to withstand expected flight load limits.
4. Sub-systems: any sub-systems such as a hydraulic system, environmental control system, parachute, brakes, etc.

**2. UA performance characteristics**

This section should include the following:

1. the performance of the UA within the proposed flight envelope, specifically addressing at least the following items:
  1. Performance: the
    1. maximum altitude;
    2. maximum endurance;



3. maximum range;
  4. maximum rate of climb;
  5. maximum rate of descent;
  6. maximum bank angle; and
  7. turn rate limits.
2. Airspeeds: the
    1. slowest speed attainable;
    2. stall speed (if applicable);
    3. nominal cruise speed;
    4. max cruise speed; and
    5. never-exceed airspeed.
2. Any performance limitations due to environmental and meteorological conditions, specifically addressing the following items:
    1. wind speed limitations (headwind, crosswind, gusts);
    2. turbulence restrictions;
    3. rain, hail, snow, ash resistance or sensitivities;
    4. the minimum visibility conditions, if applicable;
    5. outside air temperature (OAT) limits; and
    6. in-flight icing:
      1. whether the proposed operating environment includes operations in icing conditions;
      2. whether the system has an icing detection capability, and if so, what indications, if any, the system provides to the remote pilot, and/or how the system responds; and
      3. any icing protection capability of the UA, including any test data that demonstrates the performance of the icing protection system.
3. Propulsion system

This section should include the following:

    1. Principle

A description of the propulsion system and its ability to provide reliable and sufficient power to take off, climb, and maintain flight at the expected mission altitudes.
    2. Fuel-powered propulsion systems
      1. The type (manufacturer organisation and model) of engine that is used;
      2. How many engines are installed;
      3. The type and the capacity of fuel that is used;



4. How the engine performance is monitored;
  5. The status indicators, alerts (such as warning, caution and advisory), messages that are provided to the remote pilot;
  6. A description of the most critical propulsion-related failure modes/conditions and their impact on the operation of the system;
  7. How the UA responds, and the safeguards that are in place to mitigate the risk of a loss of engine power for each of the following:
    1. fuel starvation;
    2. fuel contamination;
    3. failed signal input from the remote pilot station (RPS); and
    4. engine controller failure;
  8. The in-flight restart capabilities of the engine, if applicable, and if so, a description of the manual and/or automatic features of this capability;
  9. The fuel system and how it allows for adequate control of the fuel delivery to the engine, and provides for aircrew determination of the fuel remaining. This includes a system level diagram showing the location of the system in the UA and the fuel flow path; and
  10. How the fuel system is designed in terms of safety (fire detection and extinguishing, reduction of risk in case of impact, leak prevention, etc.).
3. Electric-powered propulsion systems
1. A high-level description of the electrical distribution architecture, including items such as regulators, switches, buses, and converters, as necessary;
  2. The type of motor that is used;
  3. The number of motors that are installed;
  4. The maximum continuous power output of the motor in watts;
  5. The maximum peak power output of the motor in watts;
  6. The current range of the motor in amps;
  7. Whether the propulsion system has a separate electrical source, and if not, how the power is managed with respect to the other systems of the UA;
  8. A description of the electrical system and how it distributes adequate power to meet the requirements of the receiving systems. This should include a system level diagram showing the electrical power distribution throughout the UA;
  9. How power is generated on board the UA (for example, generators, alternators, batteries).



10. If a limited life power source such as batteries is used, the useful life of the power source during normal and emergency conditions, and how this was determined;
  11. How information on the battery status and the remaining battery capacity is provided to the remote pilot or the watchdog system;
  12. If available, a description of the source(s) of backup power for use in the event of a loss of the primary power source. This should include:
    1. the systems that are powered during backup power operation;
    2. a description of any automatic or manual load shedding; and
    3. how much operational time the backup power source provides, including the assumptions used to make this determination;
  13. How the performance of the propulsion system is monitored;
  14. The status indicators and alert (such as warning, caution and advisory) messages that are provided to the remote pilot;
  15. A description of the most critical propulsion-related failure modes/conditions and their impact on system operation;
  16. How the UA responds, and the safeguards that are in place to mitigate the risk of a propulsion system loss for each of the following:
    1. Low battery charge;
    2. A failed signal input from the RPS; and
    3. A motor controller failure;
  17. If the motor has in-flight reset capabilities, a description of the manual and/or automatic features of this capability.
4. Other propulsion systems  
A description of these systems to a level of detail equivalent to the fuel and electrical propulsions sections above.
4. Flight control surfaces and actuators  
This section should include the following:
1. A description of the design and operation of the flight control surfaces and servos/actuators, including a diagram showing the location of the control surfaces and the servos/actuators;
  2. A description of any potential failure modes and the corresponding mitigations;
  3. How the system responds to a servo/actuator failure; and
  4. How the remote-pilot or watchdog system is alerted of a servo/actuator malfunction.
5. Sensors  
This section should describe the non-payload sensor equipment on board the UA and its role.



**6. Payloads**

This section should describe the payload equipment on board the UA, including all the payload configurations that significantly change the weight and balance, electrical loads, or flight dynamics.

**3. UAS control segment**

This section should include the following:

**1. General**

An overall system architecture diagram of the avionics architecture, including the location of all air data sensors, antennas, radios, and navigation equipment. A description of any redundant systems, if available.

**2. Navigation**

1. How the UAS determines its location;
2. How the UAS navigates to its intended destination;
3. How the remote pilot responds to instructions from:
  1. air traffic control;
  2. UA observers or VOs (if applicable); and
  3. other crew members (if applicable);
4. The procedures to test the altimeter navigation system (position, altitude);
5. How the system identifies and responds to a loss of the primary means of navigation;
6. A description of any backup means of navigation; and
7. How the system responds to a loss of the secondary means of navigation, if available.

**3. Autopilot**

1. How the autopilot system was developed, and the industry or regulatory standards that were used in the development process.
2. If the autopilot is a commercial off-the-shelf (COTS) product, the type/design and the production organisation, with the criteria that were used in selecting the COTS autopilot.
3. The procedures used to install the autopilot and how its correct installation is verified, with references to any documents or procedures provided by the manufacturer's organisation and/or developed by the UAS operator's organisation.
4. If the autopilot employs input limit parameters to keep the aircraft within defined limits (structural, performance, flight envelope, etc.), a list of those limits and a description of how these limits were defined and validated.
5. The type of testing and validation that was performed (software-in-the-loop (SITL) and hardware-in-the-loop (HITL) simulations).

**4. Flight control system**

1. How the control surfaces (if any) respond to commands from the flight



control computer/autopilot.

2. A description of the flight modes (i.e. manual, artificial-stability, automatic, autonomous).
3. Flight control computer/autopilot:
  1. If there are any auxiliary controls, how the flight control computer interfaces with the auxiliary controls, and how they are protected against unintended activation.
  2. A description of the flight control computer interfaces required to determine the flight status and to issue appropriate commands.
  3. The operating system on which the flight controls are based.

**5. Remote pilot station (RPS)**

1. A description or a diagram of the RPS configuration, including screen captures of the control station displays.
2. How accurately the remote pilot can determine the attitude, altitude (or height) and position of the UA.
3. The accuracy of the transmission of critical parameters to other airspace users/air traffic control (ATC).
4. The critical commands that are safeguarded from inadvertent activation and how that is achieved (for example, is there a two-step process to command 'switch the engine off'). The kinds of inadvertent input that the remote pilot could enter to cause an undesirable outcome (for example, accidentally hitting the 'kill engine' control in flight).
5. Any other programmes that run concurrently on the ground control computer, and if there are any, the precautionary measures that are used to ensure that flight-critical processing will not be adversely affected.
6. The provisions that are made against an RPS display or interface lock-up.
7. The alerts (such as warning, caution and advisory) that the system provides to the remote pilot (e.g. low fuel or battery level, failure of critical systems, or operation out of control).
8. A description of the means to provide power to the RPS, and redundancies, if any.

**6. Detect and avoid (DAA) system**

1. Aircraft conflict avoidance
  1. A description of the system/equipment that is installed for collaborative conflict avoidance (e.g. SSR, TCAS, ADS-B, FLARM, etc.).
  2. If the equipment is qualified, details of the detailed qualification to the respective standard.
  3. If the equipment is not qualified, the criteria that were used in selecting the system.
2. Non-collaborative conflict avoidance:



A description of the equipment that is installed (e.g. vision-based, PSR data, LIDAR, etc.).

3. Obstacle conflict avoidance

A description of the system/equipment that is installed, if any, for obstacle collision avoidance.

4. Avoidance of adverse weather conditions

A description of the system/equipment that is installed, if any, for the avoidance of adverse weather conditions.

5. Standard

1. If the equipment is qualified, a list of the detailed qualification to the respective standard.

2. If the equipment is not qualified, the criteria that were used in selecting the system.

6. A description of any interface between the conflict avoidance system and the flight control computer.

7. A description of the principles that govern the installed DAA system

8. A description of the role of the remote pilot or any other remote crew in the DAA system.

9. A description of the known limitations of the DAA system.

4. Containment system

1. A description of the principles of the system/equipment used to perform containment functions for:

- 1. avoidance of specific area(s) or volume(s); or
- 2. confinement in a given area or volume.

2. The system information and, if applicable, supporting evidence that demonstrates the reliability of the containment system.

5. Ground support equipment (GSE) segment

1. A description of all the support equipment that is used on the ground, such as launch or recovery systems, generators, and power supplies.

2. A description of the standard equipment available, and the backup or emergency equipment.

3. A description of how the UAS is transported on the ground.

6. Command and control (C2) link segment

1. The standard(s) with which the system is compliant.


2. A detailed diagram that shows the system architecture of the C2 link, including informational or data flows and the performance of the subsystem, and values for the data rates and latencies, if known.

3. A description of the control link(s) connecting the UA to the RPS and any other ground systems or infrastructures, if applicable, specifically addressing the following items:






1. The spectrum that will be used for the control link and how the use of this spectrum has been coordinated. If approval of the spectrum is not required, the regulation that was used to authorise the frequency.
  2. The type of signal processing and/or link security (i.e. encryption) that is employed.
  3. The datalink margin in terms of the overall link bandwidth at the maximum anticipated distance from the RPS, and how it was determined.
  4. If there is a radio signal strength and/or health indicator or similar display to the remote pilot, how the signal strength and health values were determined, and the threshold values that represent a critically degraded signal.
  5. If the system employs redundant and/or independent control links, how different the design is, and the likely common failure modes.
  6. For satellite links, an estimate of the latencies associated with using the satellite link for aircraft control and for air traffic control communications.
  7. The design characteristics that prevent or mitigate the loss of the datalink due to the following:
    1. RF or other interference;
    2. flight beyond the communications range;
    3. antenna masking (during turns and/or at high attitude angles);
    4. a loss of functionality of the RPS;
    5. a loss of functionality of the UA; and
    6. atmospheric attenuation, including precipitation.
- 7. C2 link degradation**  
A description of the system functions in case of a C2 link degradation:
1. Whether the C2 link degradation status is available and in what form (e.g. degraded, critical, automatic messages).
  2. How the status of the C2 link degradation is announced to the remote pilot (e.g. visual, haptic, or sound).  
A description of the associated contingency procedures.
  3. Other.
- 8. C2 link loss**
1. The conditions that could lead to a loss of the C2 link.
  2. The measures in case of a loss of the C2 link.
  3. A description of the clear and distinct aural and visual alerts to the remote pilot for any case of a lost link.
  4. A description of the established lost link strategy presented in the UAS operating manual, taking into account the emergency recovery capability.
  5. A description of how the geo-awareness or geo-fencing system is used in this case, if available.
  6. The lost link strategy, and, if incorporated, the re-acquisition process in order to try to re-establish the link in a reasonably short time.

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#### A.2.9. Safety features

1. A description of the single failure modes and their recovery mode(s), if any.
2. A description of the emergency recovery capability to prevent risks to third-parties. This typically consists of:
  1. a flight termination system (FTS), procedure or function that aims to immediately end the flight; or
  2. an automatic recovery system (ARS) that is implemented through UAS crew command or by the on board systems. This may include an automatic pre-programmed course of action to reach a predefined and unpopulated forced landing area; or
  3. any combination of the above, or other methods.
3. The applicant should provide both a functional and physical diagram of the global UA system with a clear depiction of its constituent components, and, where applicable, an indication of its peculiar features (e.g. independent power supplies, redundancies, etc).

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## GM1 to AMC1 947.11 Rules for conducting an operational risk assessment

The operational risk assessment required by 947.11 of the UAS Regulation may be conducted using the methodology described with CAAB UAS Risk Assessment Matrix. Other methodologies might be used by the UAS operator as alternative means of compliance. Format of operational Risk Assessment is attached on Part H of the ANO


Item	Risk Level		Risk Management
Do you want to fly FPV	Yes		FPV Flying must be supported by an observer.  Always keep aircraft visual.  Keep safe distance of any objects within 250 meter.  Take Flight approval from CAAB
Do you want fly in Sports mode or Racing	Yes		Must not cross the speed limit as specified by manufacturer/CAAB.  Allowed only in wide space area where there is no chances of causing harm to third person  Take Flight approval from CAAB
Do you intended to Fly Multiple UAS/ Swarm	Yes		Strictly Prohibited  Allowed only after evaluation by CAAB  Take Flight approval from CAAB
Flight altitude higher than 30 meter/100 ft	Yes		Take Flight approval from CAAB
Is your aircraft weigh over 249 gm	Yes		Take a registration certificates from CAAB  Fly always in Green Zone  Avoid Flying in City area without permission  Avoid flying over group of people without permission
Is your aircraft homebuilt?	Yes		Fly always in Open field  Avoid Flying in City area  Avoid flying over group of people
Is your aircraft built with Flight Controller		No	Aircraft must be controlled by Flight Controller
Is your aircraft having GPS		No	Always keep aircraft visual.  Keep safe distance from any obstacle around 100 meter from your drone
Is your aircraft have any obstacle avoidance system		No	Always keep aircraft visual.



			Keep safe distance from any obstacle around 100 meter from your drone
Is your aircraft have Return to Home Functions		No	Always keep aircraft visual. Maximum allowed distance is 250 meter from takeoff point Keep safe distance from any obstacle around 100 meter from your drone
Is your aircraft fly automatically Low battery RTH		No	Always keep aircraft visual and monitor battery life every after 5 minutes. Maximum allowed distance is 250 meter from takeoff point Keep safe distance from any obstacle around 100 meter from your drone
Is your aircraft can land automatically in case of Motor / Power Failure, where aircraft weighs over 249 gm		No	Always keep aircraft visual. Fly always in Open field/ On river Avoid Flying over people Keep safe distance from any obstacle around 100 meter from your drone
Are you flying in zone other than the green zone	Yes		Take flight approval from CAAB
Are you flying at night	Yes		Take flight approval from CAAB Flying is only allowed in between sunrise and sunset without needing special permission from CAAB
Are you flying in Foggy Day	Yes		Always keep aircraft visual. Must keep drone lights on.
Do you fly either aircraft weigh over 249 gm or Operate in beyond Visual Line of Sight	Yes		You must have Remote Operator Certificate BVLOS must be supported by Observer
Are you taking any sorts of drugs / Alcohol before Flight or you are in stressed while in flying	Yes		STOP Operation!! You are not permitted to fly
Do you fly autonomously	Yes		Take flight approval from CAAB You must have Remote Operator and drone registration Certificate
Do you follow similar Preflight Checklist— <b>BEFORE THE DAY OF FLIGHT</b> ✓ Check the weather ✓ Firmware updated		No	STOP Operation!! You are not permitted to fly if you have the options but did not follow.




<ul style="list-style-type: none"><li>✓ App updated</li><li>✓ Flight route/Area planned</li><li>✓ Site survey/Obstacle check</li><li>✓ Shot list and storyboard</li><li>✓ Obtain required permissions</li><li>✓ Check NOTAMS</li><li>✓ Pre-Notification Requirements</li><li>✓ Aircraft batteries charged</li><li>✓ Controller charged</li><li>✓ Ground station charged</li><li>✓ Equipment packed</li><li>✓ First-Aid kit packed</li></ul> <p><b>IMMEDIATELY BEFORE FLIGHT</b></p> <ul style="list-style-type: none"><li>✓ All equipment brought</li><li>✓ Inspect aircraft for faults</li><li>✓ Warn all spectators</li><li>✓ Home point set</li><li>✓ Lens cover removed</li><li>✓ Gimbal clamp removed</li><li>✓ Check signal strength</li><li>✓ Check satellite strength</li><li>✓ Propellers tightened and free to move</li><li>✓ Compass calibrated</li><li>✓ Correct flight mode selected</li><li>✓ Batteries properly fitted</li><li>✓ Batteries correct temperature</li><li>✓ Check the wind speed</li><li>✓ Double check obstacles</li><li>✓ Takeoff and landing point established</li><li>✓ Flip antenna out</li></ul> <p><b>TAKE-OFF</b></p> <ul style="list-style-type: none"><li>✓ Controller turned on first</li><li>✓ Turn on the Aircraft</li><li>✓ Hover 15ft AGL for 15 seconds to monitor behavior and sound</li><li>✓ Check all controls are responsive</li></ul>			Follow a similarly developed checklist
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## PART H — Important Contacts

### Contact Details of Flight Safety & Airport Offices

UAS Regulatory Body	
(a) Group Captain Imranur Rahman, BUP, psc, GD(P) (b) (c) <b>Director (FSR and IA)</b> (d) Phone (Office) +880 2 8901162 (e) Civil Aviation Authority of Bangladesh, (f) Flight Standard & Regulations, Kurmitola, Dhaka-1229. (g)	
(h) A.K.M Faizul Haque (i) (j) <b>Director (Air Transportation)</b> (k) Phone (Office) +880 2 48961041 Ext 3028 (l) Civil Aviation Authority of Bangladesh, (m) Flight Standard & Regulations, Kurmitola, Dhaka-1229.	(n) Zahirul Islam (o) (p) <b>UAS Operation Inspector</b> (q) Phone (Office) +880 2 8901162 (r) Civil Aviation Authority of Bangladesh, Flight Standard & Regulations, Kurmitola, Dhaka-1229.
(s) Dewan Rashed Uddin (t) <b>UAS Airworthiness Inspector</b> (u) Phone (Office) +880 2 48961041 Ext 3028 (v) Civil Aviation Authority of Bangladesh, Flight Standard & Regulations, Kurmitola, Dhaka-1229.	
Airport Authority	
Airport Manager; Shah Amanat International Airport, Chattogram. Chattogram, Bangladesh Phone: +880 2 41350100 (Off) Fax : +880 2 41350101 e-mail : apmctg@caab.gov.bd	Airport Manager; Osmani International Airport, Sylhet. Sylhet, Bangladesh Phone: +880 821 714243 (Off) e-mail : apmsylhet@caab.gov.bd
Airport Manager, Cox's Bazar. Telephone: +880341-52353 Fax : +880341-64479 e-mail : apmcox@caab.gov.bd	Airport Manager, Jashore. Telephone: +880 421 64033 Cell: +880 1708167298 e-mail : apmjessore@caab.gov.bd
Airport Manager; Shah Makhдум Airport, Rajshahi. Phone: +880 2 47800053 (Off) e-mail: apmrajshahi@caab.gov.bd	Airport Manager, Barishal; Phone: +880 4327 73362 (Off)

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	Fax : +880 4327 73362 email : apmbarisal@caab.gov.bd
Airport Manager, Ishwardi Airport Cell: +880 1708167311 email : apmishurdi@caab.gov.bd	Airport Manager, Saidpur Airport Phone: +880552672384 Cell: +880 1708167307 email : apmsaidpur@caab.gov.bd
Airport Manager, Cumilla Airport  Cell: +880 1711966936 email : apmcomilla@caab.gov.bd	Group Captain AHM Touhid-ul Ahsan, BPP, psc, Executive Director, Hazrat Shahjalal International Airport Phone (Office) +880 2 8901449 dhsia@caab.gov.bd

### Contact Details of Various Police Stations of Bangladesh

DMP, Dhaka:	CMP, Chittagong
1) OC Ramana 01713373125	1) OC Kotwali, CMP- 01713373256
2) OC Dhanamandi 01713373126	2) OC Pahartali (North Zone) – 01713373257
3) OC Sahabag 01713373127	3) OC Panchlaish 01713373258
4) OC 01713373128 New Market	4) OC Chandgao 01713373259
5) OC Lalabag 01713373134	5) OC Khulasi 01713373260
6) OC Kotayali 01713373135	6) OC Bakoliya 01713373261
7) OC Hajaribag 01713373136	7) OC Bayezid Bostami 01713373262
8) OC Kamarangiracar 01713373137	8) OC Bandar, 01713373267
9) OC Sutrapur 01713373143	9) OC Double Muring 01713373268
10) OC Demar 01713373144	10) OC Halisahar 01713373269
11) OC Syampur 01713373145	11) OC Patenga 01713373270
1) OC Jatrabari 01713373146	1) OC Karnaphuli 01713373271
13) OC Motijheel 01713373152	13) OC Immigration (Bandar) – 01713373272
14) OC Sabujabag 01713373153	14) OC Pahartali (Bandar Zone) – 01713373273
15) OC Khilagao 01713373154	
16) OC Paltan 01713373155	<b>KMP, Khulna</b>
17) OC Uttara 01713373161	1) OC Khulana 01713373285
18) OC Airport 01713373162	2) OC Sonadanga 01713373286
19) OC Turag 01713373163	3) OC Khalisapur 01713373287
20) OC Uttarakhana 01713373164	4) OC Daulatapur 01713373288
21) OC Daksinakhan 01713373165	5) OC Khan Jahan Ali 01713373289
22) OC Gulasan 01713373171	
23) OC Dhaka Cantonment 01713373172	<b>RMP, Rajshahi</b>
24) OC Badda 01713373173	1) OC Boyaliya 01713373309

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25) OC Khilakhet 01713373174	2) OC Rajpara 01713373310
26) OC Tejagao 01713373180	3) OC Matihar 01713373311
27) OC Tejagao Industrial Area-01713373181	4) OC Shah Makhдум 01713373312
28) OC Mohammadapur 01713373182	
29) OC Adabar 01713373183	<b>Chittagong Division:</b>
30) OC Mirapur 01713373189	1) OC Rajan 01713373639
31) OC Pallabi 01713373190	2) OC Hathajari 01713373640
32) OC Kafrul 01713373191	3) OC Fatikchari 01713373641
33) OC Shah Ali 01713373192	4) OC Ranguniya 01713373642
<b>Dhaka Division</b>	5) OC Potiya 01713373643
1) OC Savar 01713373327	6) OC Mireswarai 01713373644
2) OC Dhamarai 01713373328	7) OC Sitakunda 01713373645
3) OC Keraniganj 01713373329	8) OC Anowara 01713373646
4) OC Nababganj 01713373330	9) OC Boyalkhali 01713373647
5) OC Dohar 01713373331	10) OC Bashkhali 01713373648
6) OC Ashuliya 01713373332	11) OC Satkaniya 01713373649
7) OC Dokkhin Keraniganj 01713373333	1) OC Lohagora 01713373650
8) OC Narayanganj 01713373345	13) OC Candnais 01713373651
9) OC Fatulla 01713373346	14) OC Sandwip 01713373652
10) OC Bandar (Narayanganj), 01713373347	15) OC Cox's Bazar 01713373663
11) OC Shiddhirganj 01713373348	16) OC Ramu 01713373664
12) OC Araiহার 01713373349	17) OC Ukhiya 01713373665
13) OC Sonargao 01713373350	18) OC Tekanaf 01713373666
14) OC Rupganj 01713373351	19) OC Chakoriya 01713373667
15) OC Joydebpur 01713373363	20) OC Kutubdiya 01713373668
16) OC Tongi 01713373364	21) OC Maheskhali 01713373669
17) OC Kaliyakair 01713373365	22) OC Pekuya 01713373670
18) OC Sripur 01713373366	23) OC Comilla Kotwali -01713373685
19) OC Kapasiya 01713373367	24) OC Chauddagam 01713373686
20) OC Kaliganj 01713373368	25) OC Debirdwar 01713373687
21) OC Manikganj 01713373379	26) OC Homna 01713373688
22) OC Ghior 01713373380	27) OC Laksam 01713373689
23) OC Sibaloy 01713373381	28) OC Daudkandi 01713373690
24) OC Daulatpur 01713373382	29) OC Buricang 01713373691
25) OC Harirampur 01713373383	30) OC Chandina 01713373692
26) OC Saturiya 01713373384	32) OC Barura 01713373693
27) OC Singair 01713373385	33) OC Langalakot 01713373694
28) OC Munsiganj 01713373396	34) OC Muradnagar 01713373695
29) OC Tongibari 01713373397	35) OC Brammanpara 01713373696
30) OC Lauhajang 01713373398	36) OC Meghna 01713373697
31) OC Srinagar 01713373399	37) OC Manoharganj 01713373698
32) OC Sirajdikhan 01713373400	38) OC Titas 01713373699



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33) OC Gojariya 01713373401	39) Police Headquarters South Comilla - 01713373700
34) OC Narsingdi 01713373412	40) OC Chandpur 01713373712
35) OC Raypura 01713373413	41) OC Hajiganj 01713373713
36) OC Shibpur 01713373414	42) OC Motlab 01713373714
37) OC Belabo 01713373415	43) OC Motlab Uttar 01713373714
38) OC Monohardi 01713373416	44) OC Motlab South 01713373715
39) OC Palash 01713373417	45) OC Shaharasti 01713373716
40) OC Kotwali Mayamanasinha - 01713373430	46) OC Kachuya 01713373717
41) OC Muktagacha 01713373431	47) OC Faridaganj 01713373718
42) OC Fulbari 01713373432	48) OC Haimchar 01713373719
43) OC Trishal 01713373433	49) Police Headquarter Bramman Bariya - 01713373730
44) OC Gauripur 01713373434	50) OC Sarail 01713373731
45) OC IswarGanj 01713373435	51) OC Ashuganj 01713373732
46) OC Nandail 01713373436	52) OC Nasirnagar 01713373733
47) OC Fulpur 01713373437	53) OC Nabinagar 01713373734
48) OC Haluyaghat 01713373438	54) OC Bancharampur 01713373735
49) OC Dhobaura 01713373439	55) OC Kosba 01713373736
50) OC Gaffargao 01713373440	56) OC Akhaura 01713373737
51) OC Valuka 01713373441	57) OC Sudharam, Noakhali -01713373748
52) OC Tarakandi 01713373442	58) OC Begamganj 01713373749
53) OC Tangail 01713373454	59) OC Senbag 01713373750
54) OC Mirjapur 01713373455	60) OC Sonaimuri 01713373751
55) OC Nagorpur 01713373456	61) OC Companyganj 01713373752
56) OC Sakhipur 01713373457	62) OC Chatkhil 01713373753
57) OC Basail 01713373458	63) OC Hatiya 01713373754
58) OC Delduar 01713373459	64) OC Char Jabbar 01713373755
59) OC Madhupur 01713373460	65) OC Laxmipur 01713373765
60) OC Ghatail 01713373461	66) OC Raypur 01713373766
61) OC Kalihati 01713373462	67) OC Ramganj 01713373767
62) OC Vuyapur 01713373463	68) OC Ramgati 01713373768
63) OC Jamuna Bridge East -01713373464	69) OC Feni 01713373778
64) OC Dhanbar 01713373465	70) OC Sonagaji 01713373779
65) OC Gopalpur 01713373466	71) OC Fulgaji 01713373780
66) OC Kishorgonj-01713373480	7) OC Parshuram 01713373781
67) OC Karimganj 01713373481	73) OC Chagalnaiya 01713373782
68) OC Tarail 01713373482	74) OC Dagonbhuiya 01713373783
69) OC Hosenpur 01713373483	<b>Rajshahi &amp; Rangpur Division</b>
70) OC Katiyadi 01713373484	1) OC Paba 01713373800
71) OC Bajittur 01713373485	2) OC Gudagari 01713373801
72) OC Kuliyaarchar 01713373486	3) OC Tanor 01713373802
73) OC Vairab 01713373487	4) OC Mohonpur 01713373803

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74) OC Itna 01713373488	5) OC Puthiya 01713373804
75) OC Mithamain 01713373489	6) OC Bagmara 01713373805
76) OC Nikli 01713373490	7) OC Durgapur 01713373806
77) OC Pakundiya 01713373491	8) OC Carghata 01713373807
78) OC Astagram 01713373492	9) OC Bagha 01713373808
79) OC Netrokona 01713373505	10) OC Chapai Nawbganj -01713373819
80) OC Barahatta 01713373506	11) OC Shibganj 01713373820
81) OC Kalmakanda 01713373507	12) OC Gomastapur 01713373821
82) OC Atpara 01713373508	13) OC Nachol 01713373822
83) OC Durgapur 01713373509	14) OC Volahat 01713373823
84) OC Purbo Dhala 01713373510	15) OC Naogoan 01713373836
85) OC Kenduya 01713373511	16) OC Raynagar 01713373837
86) OC Modon 01713373512	17) OC Atrai 01713373838
87) OC Mohanganj 01713373513	18) OC Dhamrai 01713373839
88) OC Khalijuri 01713373514	19) OC Badalgachi 01713373840
89) OC Sherpur 01713373523	20) OC Mahadebpur 01713373841
90) OC Nokla 01713373524	21) OC Potnitola 01713373842
91) OC Nalitabari 01713373525	22) OC Niyamatpur 01713373843
92) OC Shribardi 01713373526	23) OC Manda 01713373844
93) OC Jhinaigati 01713373527	24) OC Shapahar 01713373845
94) OC Jamalpur 01713373538	25) OC Porsha 01713373846
95) OC Melandah 01713373539	26) OC Nator 01713373857
96) OC Sharisabari 01713373540	27) OC Shingra 01713373858
97) OC Deoyanganj 01713373541	28) OC Baghatipara -01713373859
98) OC Islampur 01713373542	29) OC Gurudaspur 01713373860
99) OC Madarganj 01713373543	30) OC Lalapur 01713373861
100) OC Baksiganj 01713373544	31) OC Baraigram 01713373862
101) OC Bahadurabad 01713373545	32) OC Noldanga 01713373863
102) OC Faridpur Kotwali -01713373556	33) OC Kotwali, Rangpur -01713373874
103) OC Madhukhali 01713373557	34) OC Gongachora 01713373875
104) OC Boyalmari 01713373558	35) OC Bodarganj 01713373876
105) OC Alaphadanga 01713373559	36) OC Taraganj 01713373877
106) OC Char Vodrosan 01713373560	37) OC Mithapukur 01713373878
107) OC Nagarkanda 01713373561	38) OC Pirgacha 01713373879
108) OC Sadarpur 01713373562	39) OC Kauniya 01713373880
109) OC Salta 01713373563	40) OC Pirganj 01713373881
110) OC Bhanga 01713373564	41) OC Gaibandha 01713373892
111) OC Gopalganj 01713373572	42) OC Sadullapur 01713373893
112) OC Makasudpur 01713373573	43) OC Sundarganj 01713373894
113) OC Kasiyani 01713373574	45) OC Palashbari 01713373895
114) OC Kotalipara -01713373575	46) OC Gobindogonj 01713373896
115) OC Tungipara 01713373576	47) OC Saoghata 01713373897
116) OC Madaripur 01713373585	48) OC Fulachari 01713373898

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117) OC Rajoir 01713373586	49) OC Nilfamari 01713373909
118) OC Kalkini 01713373587	50) OC Sayedpur 01713373910
119) OC Sibachar 01713373588	51) OC Jol dhaka 01713373911
120) OC Rajbari 01713373598	52) OC Kishor Gonj (Nilphamari) 01713373912
121) OC Baliakandi -01713373599	53) OC Domar 01713373913
122) OC Pangsha 01713373600	54) OC Dimla 01713373914
123) OC Goyalanda 01713373601	55) OC Kurigram 01713373926
124) OC Gosairha 01713373612	56) OC Rajarhat 01713373927
125) OC Vedarganj 01713373613	57) OC Fulabari 01713373928
126) OC Damuddya 01713373614	58) OC Nageswari 01713373929
127) OC Jajira 01713373615	59) OC Burungamari 01713373930
128) OC Nariya 01713373616	60) OC Ulipur 01713373931
129) OC Palang 01713373617	61) OC Chilmari 01713373932
130) OC Shakhipur 01713373618	62) OC Roumari 01713373933
<b>Khulna Division</b>	63) OC Rajibpur 01713373934
1) OC PFultola 01713374103	64) OC Dhusamara 01713373935
2) OC Digholiya 01713374104	65) OC CoChakata 01713373936
3) OC Paikgacha 01713374105	66) OC Lalmanirhat 01713373946
4) OC Batiyaghata 01713374106	67) OC Aditmari 01713373947
5) OC Dumuriya 01713374107	68) OC Kaliganj 01713373948
6) OC Terokhada 01713374108	69) OC Hatibandha 01713373949
7) OC Rupsa 01713374109	70) OC Patgram 01713373950
8) OC Dakopa 01713374110	71) OC Dinajpur Kotwali -01713373963
9) OC Koyara 01713374111	72) OC Chirir Bondor 01713373964
10) OC Bagerhat 01713374122	73) OC Birol 01713373965
11) OC Fakirhat 01713374123	74) OC Parbatipur 01713373966
12) OC Mollarhat 01713374124	75) OC Birganj 01713373967
13) OC Chitalmari 01713374125	76) OC Bochaganj 01713373968
14) OC Kachuya 01713374126	77) OC Kaharula 01713373969
15) OC Moralganj 01713374127	78) OC Khansama 01713373970
16) OC Sharankhola 01713374128	79) OC Fulabari 01713373971
17) OC Mongla 01713374129	80) OC Birampur 01713373972
18) OC Rampal 01713374130	82) OC Nawabganj (Dinajpur) -01713373973
19) OC Satkhira 01713374141	83) OC Ghoraghat 01713373974
20) OC Kolaroya 01713374142	84) OC Hakimpur 01713373975
21) OC Tala 01713374143	85) OC Thakurgaon 01713373985
22) OC Kaliganj 01713374144	86) OC Baliadangi -01713373986
23) OC Shyamnagar 01713374145	87) OC Ranisankaoil 01713373987
24) OC Debhata 01713374146	88) OC Pirganj 01713373988
25) OC Ashashuni 01713374147	89) OC Haripur 01713373989
26) OC Patkelghata 01713374148	90) OC Panchagar 01713373999
27) OC Jessore Kotwali -01713374161	91) OC Boda 01713374000
28) OC Jhikargacha 01713374162	92) OC Atoyari 01713374001

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29) OC Sharsha 01713374163	93) OC Tetuliya 01713374002
30) OC Caugacha 01713374164	94) OC Debiganj 01713374003
31) OC Manirampur 01713374165	95) OC Pabna 01713374016
32) OC Kesobpur 01713374166	96) OC Iswardi 01713374017
33) OC Ovoyagar 01713374167	97) OC Atghariya 01713374018
34) OC Bagharpara 01713374168	98) OC Chatmohar 01713374019
35) OC Benapole -01713374169	99) OC Bhangura 01713374020
36) OC Benapol Check Post -01713374170	100) OC Faridpur (Pabna) 01713374021
37) OC Magura 01713374179	101) OC Surjonagar 01713374022
38) OC Salikha 01713374180	102) OC Bera 01713374023
39) OC Shripur 01713374181	103) OC Sathiya 01713374024
40) OC Mohammadapur 01713374182	104) OC Ataikula 01713374025
41) OC Jhinidah 01713374192	105) OC Sirajganj 01713374038
42) OC Kaliganj 01713374193	106) OC Sahajadpur 01713374039
43) OC Shaikupa 01713374194	107) OC Ullapara 01713374040
44) OC Horinakundu 01713374195	108) OC Cauhali 01713374041
45) OC Kotchadpur 01713374196	109) OC Tarash 01713374042
46) OC Maheshpur 01713374197	110) OC Kajipur 01713374043
47) OC Norail 01713374206	111) OC Kamarkhanda 01713374044
48) OC Kaliya 01713374207	11) OC Rayganj 01713374045
49) OC Lohagora 01713374208	113) OC Belkuchi 01713374046
50) OC Naragati 01713374209	114) OC Jamuna Bridge West -01713374047
51) OC Kushtiya 01713374220	115) OC Salanga 01713374048
52) OC Khoksa 01713374221	116) OC Enayetpur 01713374049
53) OC Kumarkhali 01713374222	117) OC Bogra 01713374061
54) OC Veramara 01713374223	118) OC Shibganj 01713374062
55) OC Daulatpur 01713374224	119) OC Sonatola 01713374063
56) OC Mirpur 01713374225	120) OC Gabtoli 01713374064
57) OC Islamic University 01713374226	121) OC Sariakandi -01713374065
58) OC Chuyadanga 01713374236	122) OC Adamdighi 01713374066
59) OC Alamdanga 01713374237	123) OC Dhupchachiya 01713374067
60) OC Jibannagar 01713374238	124) OC Kahalu 01713374068
61) OC Damurhuda 01713374239	125) OC Sherpur 01713374069
62) OC Meherpur 01713374249	126) OC Dhunat 01713374070
63) OC Gangni 01713374250	127) OC Nandigram 01713374071
64) OC Mujibnagar 01713374251	128) OC Sahajahanpur 01713374072
	129) OC Jaypurahat 01713374082
<b>Barisal Division</b>	130) OC Kalai 01713374083
1) OC Barisal Kotwali 01713374267	131) OC Khetlal 01713374084
2) OC Hijla 01713374268	132) OC Akkelpur 01713374085
3) OC Mehediganj 01713374269	133) OC Pachbibi 01713374086
4) OC Muladi 01713374270	<b>Sylhet Division</b>
5) OC Babuganj 01713374271	1) OC Kotowali Sylhet -01713374375

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6) OC Bakerganj 01713374272	2) OC Balaganj 01713374376
7) OC Banaripara 01713374273	3) OC Jaintapur 01713374377
8) OC Agauljhara 01713374274	4) OC Goyainghat 01713374378
9) OC Gauronodi 01713374275	5) OC Kanaighat 01713374379
10) OC Ujirpur 01713374276	6) OC Companyganja 01713374380
11) OC Jhalkathi 01713374286	7) OC Jokiganj 01713374381
12) OC Nolchithi 01713374287	8) OC Biyanibazar 01713374382
13) OC Rajapur 01713374288	9) OC Golapganj 01713374383
14) OC Kathaliya 01713374289	10) OC Biswonath 01713374384
15) OC Vola 01713374300	11) OC Fenchuganj 01713374385
16) OC Daulatkhan 01713374301	12) OC South Surma 01713374386
17) OC Tajumuddin 01713374302	13) OC Osmani Nagar 01713374387
18) OC Borahanuddin 01713374303	14) OC Habiganj 01713374398
19) OC Lalmohan 01713374304	15) OC Madhabpur 01713374399
20) OC Charfasion 01713374305	16) OC Chunarughat 01713374400
21) OC Monpura 01713374306	17) OC Bahubol 01713374401
22) OC Potuyakhali 01713374318	18) OC Lakhai 01713374402
23) OC Baufal 01713374319	19) OC Nabiganj 01713374403
24) OC Golachipa 01713374320	20) OC Baniyachang 01713374404
25) OC Doshmina 01713374321	21) OC Ajmiriganj 01713374405
26) OC Dumki 01713374322	22) OC Shayestaganj 01713374406
27) OC Kolapara 01713374323	23) OC Sunamganj 01713374418
28) OC Mirjaganj 01713374324	24) OC Chatak 01713374419
29) OC Rangabali 01713374325	25) OC Jagannathpur 01713374420
30) OC Pirojpur 01713374336	26) OC Tahirpur 01713374421
31) OC Vavdariya 01713374337	27) OC Biswambarpur 01713374422
32) OC Nesarabad 01713374338	28) OC Doyarabazar 01713374423
33) OC Kaukhali 01713374339	29) OC Dirai 01713374424
34) OC Najirapur 01713374340	30) OC Shalna 01713374425
35) OC Zianagar 01713374341	31) OC Jamalaganj 01713374426
36) OC Mothbariya 01713374342	32) OC Dharmapasa 01713374427
37) OC Borguna 01713374353	33) OC Madhyanganj 01713374428
38) OC Amtali 01713374354	34) OC Maulvibazar -01713374439
39) OC Pathorghata 01713374355	35) OC Shrimangol 01713374440
40) OC Betagi 01713374356	36) OC Komolaganj 01713374441
41) OC Bamona 01713374357	37) OC Rajanagar 01713374442
42) OC Taltoli 01713374358	38) OC Kulaura 01713374443
	39) OC Borolekha 01713374444
	40) OC Juri 01713374445



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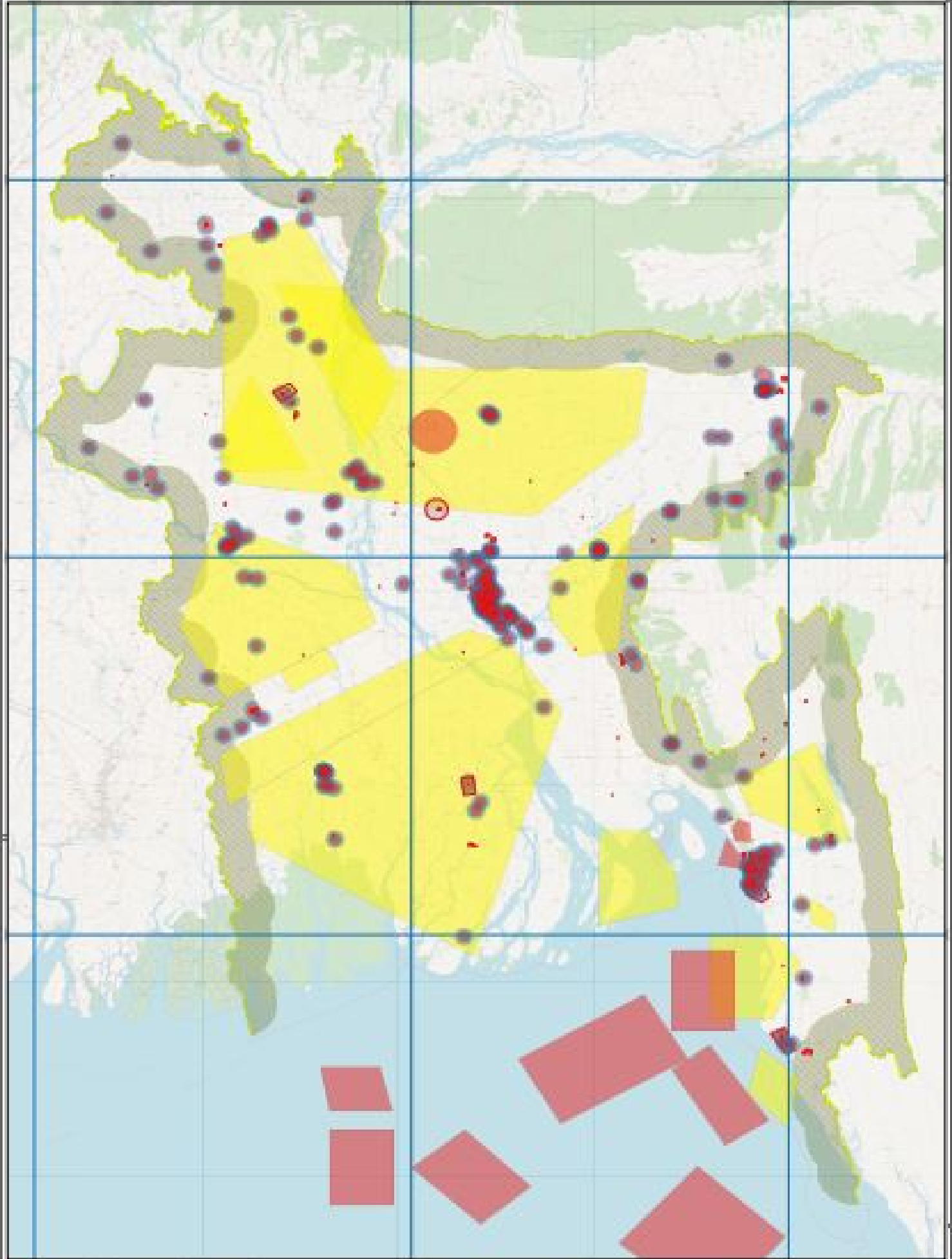
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Part 945

UAS AIRSPACE MAP



- RESTRICTED AIRSPACE
- PROHIBITED AIRSPACE
- UNMANNED AIRCRAFT SYSTEM (UAS) OPERATIONS
- UAS INCIDENTS
- UAS OPERATIONS



UAS AIRSPACE MAP  
Version 1.0  
Date: 10/15/2014



Scale: 1:100,000  
Map projection: NAD 83 / UTM  
Data source: FAA, NOAA, etc.



Legend  
Scale  
North Arrow  
Map Information