SA-CATS-101

PROPOSAL FOR THE INSERTION OF PART 101 OF THE SA CATS

PROPOSER

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PROPOSER'S INTERESTS

This proposer has been established in terms of the Civil Aviation Act, 2009 (Act No. 13 of 2009), to control and regulate civil aviation in South Africa and to oversee the functioning and development of the civil aviation industry, and, in particular, to control, regulate and promote civil aviation safety and security.

GENERAL EXPLANATORY NOTE

Words in ~~strike through~~ indicate deletions from the existing regulations.

Words underlined with a solid line indicate insertions in the existing regulations.

MOTIVATION:

This proposal is for the addition of a new Part to the SA-CATS– the proposal is necessitated by the fact that there were no regulatory requirements for the operation of Remotely Piloted Aircraft Systems.

SUBPART 1: General

101.01.5 RPAS classifications shall be as in table 1.

Class	**TABLE 1: RPAS CLASSIFICATIONS**			
	line-of-sight	**Kinetic energy* (J)**	**Height (AGL)(ft.)**	**MTOM (kg)**
Class 1A	R-VLOS/VLOS/E-VLOS/	A	H < 400	M < 1.5
Class 1B	R-VLOS/VLOS/E-VLOS/	E_k < 15	H < 400	M < 7
Class 1C	R-VLOS/VLOS/E-VLOS/	15 <E_k < 34	H < 400	M < 20
Class 2A	VLOS	E_k > 34	H < 400	M < 20
Class 2B	EXPERIMENTAL/RESEARCH			
Class 3A	RLOS	E_k > 34	H < 400	M < 150
Class 3B	VLOS	A	H > 400	M < 150
Class 4A	RLOS	A	H > 400	M < 150
Class 4B	A	A	A	M > 150
Class 5	Reserved	Reserved	Reserved	Reserved
Reserved - means to be used in the future				
H - means height above the surface				
A - means any value				

$E_k = 1/2 * Mass * (1.4v_{max})^2$

101.01.7 RPA Sale and Re-sales Labelling

On the sale or re-sale of any RPA, the seller must display, and insert a notice, such that purchaser is made aware of the following information. Such notice should, as a minimum include the follows:

CAUTION: The operation of Remotely Piloted Aircraft is regulated in terms of the South African Civil Aviation Regulations.

Operations as a hobbyist are subject to the terms of Part 94, whereas private use is restricted in terms of Part 101.01.4.

For private use –

(a) The RPAS may only be used for an individual personal and private purposes where there is no commercial outcome, interest or gain;

(b) The RPA may only be operated over property for which the operator has ownership or permission;

(c) The RPAS can only be used in Restricted Visual Line of Sight which means within 500m of the operator, and never to exceed the height of the highest obstacle within 300m of the RPA, during which the operator can maintain direct unaided visual contact with the device to manage its flight and avoid contact or collision responsibilities; and

(d) The operator must observe all statutory requirements relating to liability, privacy and any other laws enforceable by any other authorities.

For all other use –

(a) the RPA must first be approved by the South African Civil Aviation Authority for use by way of a RPA Letter of Authority (RLA);

(b) all RPA's must be registered by the South African Civil Aviation Authority prior to use;

(c) a RPA may only be operated in terms of Part 101 of the South African Civil Aviation Regulations which includes specific requirements that the operator shall hold a RPA Pilots License; and

(d) no RPA may be sold to any person under the age of 18.

101.02.2 RPAS System Safety Requirements

An application for an initial approval, where no certification exists from an ICAO state, such application shall be accompanied by all of the following information that's available from the manufacturer:

1. The RPAS Operators Manual from the manufacturer.
2. A submission, prepared by the applicant outlining all of the following information to the extent known, or available:
    a. For Class 1 and Class 2 operations, only sections 1 and 2 below
    b. For Class 3, Class 4 and Class 5 all sections below

Section 1 – RPAS Information

1.1 RPAS type
1.2 RPA structure
1.3 RPA composition
1.4 flight envelope capability
1.5 RPA dimensions / measurements and weight together with drawings
1.6 mass and balance

Section 2 - Performance Characteristics

2.1 maximum altitude
2.2 maximum endurance
2.3 maximum range
2.4 Airspeed (take-off, cruise, landing, stall, maximum)
2.5 maximum rate of climb
2.6 maximum rate of descent
2.7 maximum bank angle
2.8 turn rate limits

Section 3 – Performance Capabilities and Limitations

3.1 RPA performance limitations due to environmental and meteorological conditions (wind, ice, humidity, temperature, precipitation, hail)
3.2 required take-off and landing distances and/or areas
3.3 power type
3.4 propulsion system (such as engine/motor, fuel, electrical, hydraulic, pneumatic, gas, solar)
3.5 flight control surfaces and actuators
3.6 payloads (specific or generic)
3.7 location of all air data sensors, antennas, radios, and navigation equipment with respect to segregation and redundancy
3.8 autopilot (type, manufacturer, description of working method)
3.9 navigation systems (description of the components, together with horizontal, vertical position and velocity accuracy)
3.10 use of frequencies
3.11 sensors and/or telemetry
3.12 flight recovery system
3.13 remote pilot station
3.14 ground support equipment
3.15 surveillance equipment

Section 4 – Emergencies & System Failures

4.1 At the minimum, the following emergency scenarios should be documented:
4.2 loss of autopilot (fatal error)
4.3 loss of flight control due to servo failure, if applicable
4.4 loss of propulsion power

4.5 loss of engine power (one engine out), if applicable
4.6 low battery voltage, if applicable
4.7 loss of navigation components (heading or altitude)
4.8 loss of Global Navigation Satellite System
4.9 loss of data link (radio control link failure)
4.10 loss of remote pilot station (remote pilot station communication failure)
4.11 loss of power of remote pilot station
4.12 loss of remote pilot/RPA observer communication
4.13 Dealing with structural damage
4.14 Any other failure modes or scenarios other than those listed above that can endanger safe flight, shall be identified, described and managed in appropriate manner.

Section 5 – Hazard Assessment

An objective assessment of the RPAS's potential hazard considerations, which should include:

(a) Identification of RPAS functions
(b) Systems that assist with the identification of failure conditions
(c) Management and mitigations of the failure conditions
(d) A list of alarms and methods for troubleshooting

Section 6 – Fail safe features

Procedures to be followed by the remote pilot in case of malfunctions or failure Information of a flight termination feature.

101.02.4 Registration and Markings

1. Identification plate

(1) Every South African registered RPAS must have affixed to it an identification plate (engraved, stamped or etched) with its nationality and registration marks.
(2) The identification plate must be –
(a) made of fireproof material of suitable physical properties;
(b) affixed to the RPA in a prominent position; and
(c) must include the registration mark issued by the authority which appears on the RPAs certificate of registration

2. Display of marks

(1) The nationality and registration marks must be –
(a) affixed to the RPA by an appropriate means so as to ensure that such marking will not become detached from the RPA in the event of an accident or destruction of the RPA;
(b) legible;
(c) displayed to the best possible advantage having regard to the construction or features of the RPA; and

(d) kept clean and visible at all times.

(2) The registration mark letters and hyphen must be printed/painted in the font Roman, style Bold, in black on a yellow background. The height of the yellow background shall be at least 120% of the font height.
(3) The size of the registration mark must be commensurate to the size of the RPA

3. Location of marks:

(1) The marks on a fixed wing RPA must appear –
(a) on the bottom and top of each wing; and
(b) on both sides of the fuselage between the wings and tail surfaces, or on the upper halves of the vertical tail surfaces

(2) The marks on a single or multi-rotor RPA must appear –
(a) For spherical RPA;
  (i) The marks must be proportional to the surface area in two place diametrically opposite.
(b) For non-spherical
  (i) The marks must be proportional to the surface on each side.

4. Specification of marks
(1) The nationality and registration marks must consist of capital letters in the Roman font without ornamentation.
(2) The width of each letter (except letter "I") and the length of the hyphen must be two-thirds of the height of the letter – where possible.
(3) Each letter must be separated from the letter which immediately precedes or follows it by a space equal to one-third the height of the individual letters, the hyphen being regarded as a letter for this purpose.
(4) The lines forming the letters and hyphen must be solid and the thickness of those lines must be one-sixth of the height of the letter.

101.03.3 Syllabi for the theoretical knowledge examinations

1. General

(1) The subjects and items relevant to the different categories of licence (aeroplane, helicopter and multirotor) are specified below.

(2) Rewrite after failure

(a) A candidate may not apply to rewrite an examination until he or she has received the official result notification.
(b) A candidate who has failed an examination conducted by the Authority for the issue of a flight crew licence or rating may not rewrite the examination:

(i) in the case of a first or second failure, within a period of 7 calendar days;
(ii) in the case of a third or subsequent failure, within a period of 2 calendar months;
(iii) where a mark of less than 50% was achieved, within a period of 2 calendar months.

(c) If a mark of less than 50% is achieved in conjunction with a third or subsequent failure, the respective periods of 2 calendar months shall run concurrently.

(3) Re-mark after failure

(a) A candidate who fails an examination may, within 30 days from the date of notification of the examination results, apply in writing for a re-mark.
(b) Candidates who fail with a mark of 65% or above may request a re-mark.
(c) The application shall be accompanied by the appropriate fee prescribed in Part 187.
(d) If the re-mark results in a pass of the examination concerned, the fee will be refunded.
(e) A candidate may not rewrite any examination in respect of which a re-mark has been requested and for which he or she has not been notified of the official result. Failure to comply with this condition will result in the premature re-write being invalidated and the applicable examination fee forfeited.

(4) Remote pilot general examination

(a) This examination must be passed before the first licence examination may be written.
(b) The examination is not required for any subsequent licence examinations.

(5) Licence examinations:

(a) Remote pilot licence aeroplane.
(b) Remote pilot licence helicopter.
(c) Remote pilot licence multirotor.

2. Items applicable to the remote pilot general examination

(1) Air law for remotely piloted aircraft (RPA)

(a) SACAR 101 and Document SACATS 101.

(2) Human factors

(a) Vision

(i) Empty field myopia

(ii) Adaptation to darkness

(iii) Autokinesis.

(b) Stress management

(i) Causes of stress (stressors).

(3) Meteorology

(a) Factors affecting air density
(b) Fog and mist
(c) Wind and gusts
(d) Thunderstorms.
(e) Aviation weather reports.

(4) Navigation

(a) Latitude and longitude
(b) Aeronautical chart information (VFR)
(c) GPS

(i) Components of a GPS system as used on an RPA

(5) Lighting for remotely piloted aircraft.

3. Items applicable to all remote pilot licences

(1) Construction and parts of the remotely piloted aircraft (RPA) (as applicable to the category of licence)

(2) Forces acting on an aircraft (as applicable to the category of licence)

(a) Weight
(b) Lift
(c) Drag
(d) Thrust

(3) Axes of an aircraft and motion about the axes

(a) Lateral axis – pitch
(b) Longitudinal axis – roll
(c) Normal axis – yaw.

(4) Control of motion about the axes (as applicable to the category of licence)

(5) Propulsion systems (as applicable to the category of licence)

(a) Electric motors

(i) Brushed motors
(ii) Brushless motors
(iii) Motor ratings.

(b) Electronic speed controllers
(c) Petrol engines
(d) Fuel mixtures
(e) Propellers

(i) Sizes (length and pitch).

(6) Weight and balance (as applicable to the category of licence)

(a) Dimensions and weight of aircraft
(b) Arm, moment, reference datum, flight station, centre of gravity
(c) Forward and aft limitations of CG.

(7) Servo motors and servo actuators used in remotely piloted aircraft.

(8) Radio control link

(a) Radio control transmitter and receiver

(i) Setup (as applicable to the category of licence).

(b) Frequencies used.

(9) Data link (C2 link)

(a) Airborne receiver
(b) Remote pilot station

(i) Control and command functions
(ii) Telemetry
(iii) Detect and avoid uplink and downlink
(iv) First person view (FPV)
(v) Mission planner software
(vi) Position and obstacle mapping
(vii) Waypoint navigation.

(c) Frequencies used
(d) Setup.

(10) Wireless links general

(a) Line-of-sight

(i) Fresnel zones

(b) Interference
(c) Coverage range
(d) Antennas as used in remotely piloted aircraft systems.

(11) Flight controller (autopilot system)

(a) Inputs and outputs
(b) Inertial measurement unit (IMU)
(c) Flight modes and facilities
(d) Setup.

(12) Batteries

(a) Sealed lead-acid (SLA)
(b) Nickel-cadmium (NiCad)
(c) Nickel-metal hydride (NiMH)
(d) Lithium-ion (Li-Ion)
(e) Lithium polymer (Li-Poly / LiPo)
(f) Charging of batteries.

(13) The functions and required actions of the RPA observer.

4. Items applicable to the aeroplane remote pilot licence (RPL(A))

(1) The stall

(a) Boundary layer
(b) Stalling angle of attack
(c) Aeroplane characteristics at the stall.

5. Items applicable to the helicopter remote pilot licence (RPL(H))

(1) Flight controls

(a) Collective control
(b) Cyclic control
(d) Anti-torque control.

(2) Main and tail rotors.

(3) Swash plate.
(4) Rotor head.
(5) Rotor blade stall.
(6) Fly bar.
(7) Ground effect.
(8) Helicopter setup.

6. Items applicable to the multirotor remote pilot licence (RPL(MR))

(1) Different configurations and frames.

101.03.4 Flight Training Syllabi

1. Flight training can be a combination of simulator and aircraft training. The exercises need not be done in the sequence given.

2. Items applicable to all remote pilot licences

(1) Aircraft preflight inspection and setup.
(2) Post-launch in-flight evaluation procedures (checking of systems directly after launch - if applicable to the category of licence).
(3) Automated flying and flight controller flight modes.
(4) First person view (FPV) flying (if applicable).
(5) Parachute assisted landing (if applicable to the category of licence).
(6) Evasive action (maneuvers) to avoid collisions.
(7) Post-flight inspection.

3. Items applicable to the aeroplane remote pilot licence (RPL(A))

(1) Climbing and descending.
(2) Turns while maintaining altitude.
(3) Climbing and descending turns.
(4) Speed changes while maintaining altitude.
(5) Horizontal figure eight.
(6) Stalls.
(7) Recovery from a spin.
(8) Takeoffs.
(9) Catapult launch (if applicable).
(10) Hand launch (if applicable).
(11) Approaches and landings.
(12) Hand launching (if applicable).
(13) Engine failure

(a) At altitude
(b) After takeoff
(c) On the approach.

4. Items applicable to the helicopter remote pilot licence (RPL(H))

(1) Tail in hover.
(2) Tail in hover performing squares and circles.
(3) Takeoffs.
(4) Tail in hover performing a horisontal figure eight.
(5) Tail in hover performing a vertical rectangle.
(6) Side on hover (both sides)
(7) Transition from hover to forward flight.
(8) Transition from forward flight to hover.
(9) Turns from level flight.
(10) Climbing and descending from level flight.
(11) Approach and landing.
(12) Nose in hover.
(13) Autorotation.

5. Items applicable to the multirotor remote pilot licence (RPL(MR))

(1) Tail in hover.
(2) Tail in hover yawing slowly to right and left.
(3) Tail in hover, move to right then to left.
(4) Tail in hover, move forwards then backwards.
(5) Tail in hover, ascend and descend.
(6) Takeoffs.
(7) Tail in hover performing a horisontal rectangle.
(8) Tail in hover performing a vertical rectangle.
(9) Nose in hover.
(10) From hover fly a square box rotating (yawing) the multirotor in the direction of flight.
(11) From hover fly a circle rotating (yawing) the multirotor nose-in to the centre of the circle.
(12) Transition from hover to forward flight.
(13) Climbing and descending from level flight.
(14) Turns from level flight.
(15) Speed control in level flight.
(16) Approach and landings.
(17) Actions after failure of a motor.

101.04.4 Operations Manual

Each ROC holder shall submit to the Director for approval, an Operations Manual (OM), the content of which is commensurate with the size and scope of their intended operations. The content of the OM shall be in the following format –

Part A General

(a) Administration & control
(i) Company information, address and contact details
(ii) Index - Contents of manual

(iii) List of effective pages to control the version and revision of such OM
(iv) Revision number
(v) Distribution list
(vi) Definitions / Acronyms
(vii) Statement of Compliance

(b) Organization and operational control

(i) Organizational structure including an Organogram;
(ii) Organizational responsibilities of post holders and designated persons;
(iii) Responsibilities of support personnel;
(iv) Technical description of each RPAS for intended use by the ROC holder;
(v) Area or scope of operation;
(vi) Operating limitations and considerations required by the Director;
(vii) Operational Control Parameters;
(viii) Accident prevention and safety programme;
(ix) Flight crew qualifications and duties
(x) RPA Operations;
(xii) Crew health
(xiii) Documents and Record keeping

Part B Operating Procedures

(a) Flight planning / preparation

(i) Scope and feasibility

(ii) Site location assessment considerations:

aa) airspace considerations

bb) conflicting aircraft or RPA traffic

cc) hazards identification

dd) local by-laws

ee) obstructions

ff) restrictions

gg) habitation and conflicting activities

hh) public access

ii) permission from landowner

jj) likely operating site and alternative sites

kk) weather conditions and planning

(iii) Risk management - Identification of the hazards, risk assessment, mitigating procedures.

(iv) Communication procedures;

(v) Notification of intended operations to affected persons;

(vi) Location and site permissions

(vii) Weather considerations

(b) On site procedures & pre-flight checks

(i) Site visual survey;
(ii) Selection of operating area;

(iii) Crew briefing

(iv) Cordoning off procedure (where applicable);
(v) Communication range and capability requirements;
(vi) Weather observations;
(vii) Re-fueling or recharging;
(viii) Loading of operational equipment;
(ix) Preparation and assembly of RPA on site;
(x) Pre-flight and post flight checks

(c) Flight procedure
(i) start
(ii) take-off
(iii) in flight
(iv) landing
(v) shutdown

(d) Emergency procedure

(i) Unique to the RPA of intended operations;

(ii) Fire - Risk and preventative measures;

(iii) Accidents considerations and emergency response plan
(iv) Loss of control data link
(v) RPA - normal, abnormal and emergency procedures

Part C Training

(a) Details of operators training programme

Part D Safety & Security

Part E (Optional for smaller operators)
(a) SMS and
(b) Quality Assurance Programme

101.04.6 Security

An operator shall ensure that policy and procedures in respect to the following aspects of security are addressed in their operations manual:

1. RPAS operator organization and designation of a security coordinator;

2. Requirements for checks and searches of specific areas and accessible compartments of the interior and exterior of RPAS;

3. Prevention of unauthorized access to remotely piloted aircraft and ground control stations;

4. Protection efforts pertaining to limiting the software and C2 links from forms of interference;

5. Response procedures for crew members and other staff for threats and incidents;

6. Special procedures for crop spraying operations, the carrying of weapons, dangerous goods, high consequence dangerous goods and high value cargo, if applicable;

7. Crew member briefings concerning security/safety sensitive cargo loads;

8. Additional security measures for special or more threatening situations;

9. Reporting of security related incidents to the authority;

10. Details on procedures and frequency on conducting background checks and recurrent criminal record checks; and

11. Details on security awareness and response procedure training.

101.05.3 Controlled Airspace

1. An RPA, intended for operations within an ATZ or CTR, shall as a minimum, meet the following technical requirements, which must be serviceable and functioning for the duration of such proposed operation, the failure to any one of which, shall require that such operations are terminated:
   a. Be fitted with a mode C or S transponder capable of displaying the unique squawk code issued to them, unless otherwise exempted by the Director and/or the applicable ATSU/CAMU according to an FUA application;
   b. Be fitted with an altimeter, capable of displaying to the operator on the RPS, the RPA's altitude above mean sea level, corrected for ambient pressure (QNH);

c. Be fitted with a functioning strobe light or lights, installed in such a way that such strobe lights are visible from both the top and bottom of the RPA; and
d. In the instance of a fixed-wing RPA, be fitted with navigation lights.

2. An ROC holder, who intends operating in an ATZ or CTR, shall as a minimum, meet the following operational requirements:
   a. Include in their Operational Manual, details pertaining to such RPA operations under their ROC, detailing how the safety and separation measures for aircraft operating in the ATZ or CTR will be achieved;
   b. Notify the relevant ATSU/CAMU in advance of such operations, outlining the intended type and scope of operations;
   c. Receive confirmation from the ATSU that such operations can be accommodated, wherein such ATSU may outline any limitations, requirements or considerations pertinent to the RPA design capability or operational circumstances;
   d. Supply the ATSU/CAMU with the intended RPA's performance details including at least the type of RPA, speed, rate of climb and descent and abort or emergency landing procedure;
   e. Communicate, and have approved, or accept instructions pertaining to all movements of such RPA from the ATSU via air-band communications;
   f. Include a detailed response and reaction procedure, agreed by both the ROC holder and the relevant ATSU/CAMU, in respect to the handling of any emergency, which as a minimum shall include:
      i. Aborting the RPA's activity detailing the time to and expected landing place and capability;
      ii. Loss of control, which shall include both a technical failure of the RPA and a link failure between the RPS and the RPA; and
      iii. Procedures relating to a loss of communication between the ATSU/CAMU and the RPA Operator.

101.05.8 C2 operational requirements

1. A prospective operator of an RPAS system shall develop the C2 performance requirements safety case for approval of the Director.

(a) The following C2 functions shall be considered for the safety case:

(i) Downlink

(aa) Link health telemetry [for BVLOS operations]

(bb) System health

(ii)Telemetry

(aa) RPA flight dynamics

(bb) Situation awareness [for BVLOS operations]

(cc) Data records

(iii) Uplink

(aa) Flight Control

(bb) RPA System control

(cc) Automatic Identification System update [for BVLOS operations]
(dd) RPAS hand over
(ee) Link health telemetry [for BVLOS operations]

2. The RPAS operator shall present the target values of the C2 Performance requirements that were obtained from the safety case of the C2 functions to the Director.
(a) Continuity
(b) Integrity
(c) Availability
(d) Latency of the C2 data link.

101.05.10 Beyond visual-line-of-sight

1. Outside controlled air space

An RPAS, intended for B-VLOS operations shall as a minimum, meet the following operational and technical requirements;

(a) The operator shall demonstrate compliance with the following technical requirements:

(i) that the RPA will only be operated using command inputs;

(ii) has met the requirements prescribed in Technical Standard-101.02.2;

(iii) that the RPA has the ability to remain clear from obstacles and any other hazards and can take appropriate action to execute collision avoidance from such obstacles or other aircraft where necessary. This shall be applicable for normal and lost/degregated C2 links unless;

(aa) The area is void of other air traffic; or

(bb) The operation occurs in specifically delimited or segregated airspace; or

(cc) Any other mitigation is in place to avoid other aircraft, obstacles or any hazards.

(iv) the C2 data link frequency to be used for data link is deemed appropriate by the Director; and

(v) The C2 performance requirements as specified in Technical Standard 101.05.8 are acceptable to the Director;

(b) The operator shall demonstrate to the satisfaction of the Director the following operational capabilities prior to achieving approval for B-VLOS operations:

i. Show how the intended RPA will perform all its flight tasks through control inputs whilst in flight, and that such device is not ordinarily required to be flown manually;
ii. Command the RPA to following a predetermined course or group of way-point inputs;
iii. Provide inputs to the RPA that in the event of needing to avoid any aircraft or other obstacle, the RPA pilot is able to interrupt or introduce commands or instructions to the RPA, such that the RPA can be interrupted from its set course and can safely fly an alternative course, or land, to avoid known traffic;
iv. How the exact position of the RPA is displayed to the pilot, in real-time, on an moving map, such that the RPA pilot will be able to make radio calls and report the position of such RPA to any aircraft in the vicinity or to an ATSU providing services or controlling such airspace;
v. How it reacts in the instance of receiving a flight position command that conflicts with the existence of obstacles or high ground.

2. Inside controlled air space

B-VLOS operations in controlled air space shall;

(i) meet requirements of Techncial Standard 101.05.3; and

(ii) meet requirements of Techncial Standard 101.05.10

101.05.11 Night operations

For operations at night, the holder of a ROC, must demonstrate to the satisfaction of the Director, how in the instance of their RPAS:

(a) they meet the requirements for B-VLOS operations below 400 foot; and
(b) have strobe lighting installed on the RPA;
(c) for fixed wing operations, have navigation lights or in the instance of a helicopter or multi-rotor RPA, have a beacon light installed;

101.05.16 Pre-flight preparations

1. Every remote pilot shall verify the relevant notifications for his/her area of operation before take-off, and coordinate if necessary.
2. Every remote pilot shall verify the NOTAM publication for his/her area of operation before take-off, and adapt the mission planning if necessary..

3. The remote pilot shall take into account the meteorological information relevant for his/her area of operations.
4. When planning a flight, the weather shall be assessed based on suitable documentation such as forecasts, current weather or other suitable information, to determine whether the planned flight can be carried out in accordance with the system's technical and operational limitations.
5. The weather in which flights are to take place shall be such that the system can be operated in a safe way in all phases of flight.
6. Before a flight is carried out, the flight shall be planned and prepared using up-to-date aeronautical charts, to determine in which type of airspace the flight will be carried out.
7. Before a flight is carried out, the flight shall be planned and prepared using information and documentation such as AIP, AIP supplements, NOTAM, so that the flight can be carried out in a safe way within the conditions specified in the RPAS operator certificate and according to the operations manual.
8. The remote pilot shall have ensured before taking-off, that the flight can be carried out in a safe way.
9. The operator shall ensure that the system's status is inspected before a flight is carried out.
10. The remote pilot shall ensure that his/her physical and mental condition are so that the safety of the air traffic cannot be put in danger. Otherwise the remote pilot shall not start the flight.
11. The remote pilot shall ensure that all required documents are available before starting the flight.
12. Before every flight, the roles and duties of each crew member must be defined. The remote pilot is responsible for the operation and safety of the aircraft and its payload, if applicable and for the safety of all crew members.

101.06.5 RMT Logbooks

The log book shall contain the following as a minimum:

1. Full name
2. Identification number
3. Name of employer
4. Record of all technical courses attended
5. Date of maintenance
6. Type and make of RPA (e.g. Multi-rotor)
7. Work carried out (inspection, repair, overhaul etc.)
8. Signature of Quality Assurance