Kevin R Parks, M.Sc., RPAS


1st SQUADRONE

AIRCRAFT MANUAL

Flight maintenance and records

Commercial Aerial Drone Pilot TP15263

KR Parks, M.Sc., RPAS

Remotely Piloted Aircraft Systems

1st SQUADRONE

-Forever Flying Forward-

Latest Revision 12-18-2020

The proper maintenance of the aircraft under your responsibility is a

requirement of Transport Canada. This manual is drafted to be compliant with TP15263 regulations:
https://tc.canada.ca/en/aviation/publications/knowledge-requirements-pilots-remotely-piloted-aircraft-systems-250-g-including-25-kg-operating-within-visual-line-sight-vlos-tp-15263

Government of Canada Gouvernement du Canada

1st Squadrone is a self declared registered RPAS Flight School with transport Canada listing of approved programs is here:

https://tc.canada.ca/en/aviation/drone-safety/find-drone-flight-school

Yours Truly

KR Parks, M.Sc.

1st SQUADRONE

Aircraft repairs, updates, routine maintenance and reports:

The proper care and maintenance of aircraft is a primary concern of the pilot/owner.

This document is designed to be mainained in a binder or clip, such as a bull clip. So that pages can be added as records are kept.

Regulations on Aircraft Maintenance and Records

Transport Canada requires pilots maintain records on flights and aircraft. That updates, recalls, software updates are performed and recorded.

This manual must also be with you durin goperations and available for on site inspection.

Emergency Contingency Plan

The following procedures must be followed in case of a fly-away, crash, close encounter with another aircraft, or hard landing. To expedited notifications to TC, the Pilot will know the location of their project in decimal degrees

Fly-away Procedures

A fly-away occurs when the Pilot loses control of the RPAS and the RPA exits the project area in either a vertical or horizontal direction. The procedures to recover control will vary depending on the RPAS;

Procedure to activate 'RTH' (Return to Home)

1. Press the “RTH -Return to Home” button on the controller to try and command the Drone to return to the site.

2. If the home button does not work, the Pilot will attempt to take manual control of the Drone and fly it back to the site.

> If these are successful, the Pilot will immediately land the RPA and cease all flying until the issue is resolved.
>
> If the Pilot cannot regain control of the RPA, the Pilot will activate emergency procedures as follows:

Fly-away noted Information

> 1. Estimated battery life, direction of flight, potential range AND any aerodromes affected. RPA model, weight, range and color.
>
> 2. Contact the nearest local controlled aerodrome using the Canadian Flight Supplement.

Crash Procedures & Analysis

If the RPA is involved in a crash the following steps are followed:

1. Turn off the controller and ensure the RPAS is deactivated to avoid further damage or injury.

2. Determine if there are any injuries and if so follow standard first aid procedures.

a. Ensure the area is safe and secure.

b. Call Emergency services 911 and render medical aid if required.

3. Assess if the RPA has caused damage to vehicles, buildings, poerlines or infrastructure. Ensure there is no further risk of damage or danger.

6. Once safe to do so, record the following:

a. Time of incident.

b. Weather conditions.

c. Events leading to the crash.

d. Pictures of any damage.

7. Record the incident on the incident tracker. Attach all applicable documentation to the incident report including:

a. Pilot record of incident.

b. OHS report.

c. Pictures of damage if applicable.

Safety & Security Plan

All Pilots and Ground Supervisors listed on the SFOC will have a good understanding of airspace classification and structure, weather, notice to airmen (NOTAM) reporting services, VTA and VNC, the Canadian Flight Supplement (located in an emergency backpack with First Aid kit and Fire extinguisher), and relevant sections of the Canadian Aviation Regulations, particularly sections 602.01, 602.07, 602.11, 602.21 and 602.4.

NOTAMs should always be filed for any RPAS operation within 5 NM of any aerodrome or within class C, D, Eor F airspace.

1. Dimensions of RPAS Operations area (within 1 NM is considered standard) with reference to the:

A. Area of operation, expressed as latitude/longitude, and

B. Planned operational altitudes, in feet above ground level.

C. RPA specifics, model, size, weight, colour.

D. Date and time of operation.

E. User contact information.

All RPAS operations will be conducted so that the safety of persons and property on the ground and other airspace users is not jeopardized. The procedures listed below will be reviewed prior to each RPAS flight activity:

1. The RPAS users are responsible for compliance with TC rules and guidelines at all times. As RPAS

2. RPAS users are responsible for complying with all other Canadian laws that might apply (e.g. Privacy Act, Criminal Code of Canada etc.) during operation. All provincial, territorial, and municipal laws and regulations must also be followed.

3. RPAS use is restricted to authorized staff only. The SFOC Certificate Holder/Pilot is in charge of determing whom may be involved and to what extent and assumes all responsibility for such action(s).

4. Always have on hand the RPAS Directive, SFOC, proof of liability insurance, VHF air band transceiver,

RPAS user contact info, maps/charts, aircraft system limitation (user manual), means of communication (cell phone, satellite radio), and fire extinguisher.

5. RPAS Lithium Polymer batteries will be transported according to the Dangerous Goods Transportation and Handling Act. Each battery must be separated from metal objects and battery terminals insulated with electrical tape or other non-conductive material as this will prevent short circuits.

6. RPAS users shall adhere to all responsibilities outlined in section 6.0.

7. Remote control signal loss and/or GPS loss may result in loss of control of the RPA and will be mitigated by:

a. Calibrating the RPAS compass before each flight.

b. Ensuring battery is above 90% or more if required prior to takeoff.

c. Ensuring GPS lock and home point are acquired.

d. Ensuring the mission is within the RPAS operating specifications.

e. Planning flight to complete with 30% battery power remaining.

8. RPAs not being operated shall be stored in a secure way (i.e. pelican case inside a flammable cabinet).

RPAS Maintenance

The type of maintenance performed on a RPAS will depend on the RPAS type and the recommendations from the

manufacturer of the RPAS. The Pilot and/or owner of the RPAS will follow these guidelines:

1. Never open the body of a RPAS or attempt to perform any maintenance on a RPAS that is not prescribed in the RPAS's user manual.

2. Follow the manufacturer's recommended maintenance cycles and storage recommendations.

3. Before and after each flight, inspect the RPA for visible signs of damage to any of the components paying

close attention to the rotors.

4. Replace damaged rotors immediately and discard them.

5. Firmware upgrades must be performed regularly. Ensure that:

a. The craft is up to date before operational flights.

b. The controller and batteries are updated at the same time.

c. After all updates, a test flight must be performed to ensure that the update was successful and that there are no conflicts between the RPA, batteries, and the controller.

Incident Reporting

Reporting of incidents is imperative to ensuring the operation of a safe and legally compliant RPAS program. Incident reporting serves not only as a way to stay legally compliant, but also serves as a mechanism that will enable tracking issues that may prove to undermine the effectiveness of a specific RPAS. Incident reporting will also enable the FOC to identify gaps in training and provide an avenue to address those gaps. Additionally, federal law dictates that a Pilot of a RPAS cease operations if any of the following incidents or accidents occurs, until such time as the cause of the occurrence has been determined and corrective actions have been

taken to eliminate the risk of reoccurrence:

1. Injuries to any person requiring medical attention.

2. Unintended contact between the unmanned aircraft and persons, animals, vehicles, vessels, buildings or structures.

3. Unanticipated damage incurred to the airframe, control station, payload or command and control links that adversely affects the performance or flight characteristics of the unmanned aircraft.

4. Anytime the unmanned aircraft is not kept within lateral boundaries or altitude limits.

5. Any collision with or loss of separation from another aircraft.

6. Anytime the unmanned aircraft becomes uncontrollable, experiences a fly-away or is missing.

7. Any incident not referred to in paragraphs (a) to (f) for which a Canadian Aviation Daily Occurrence Report.

In situations where a report of interference from any persons that jeopardized the safety of the flight (either direct interference with the crew and/or the aircraft), the crew will notify the FOC and cease operations until the issue is resolved.

Section 10.0 of this Directive outlines an order of operations for internal reporting of incidents in the Emergency Contingency Plan. Internal incidents are reported through an online form (Figure 2). This is a live system that immediately notifies the FOC that an incident has occurred. If the incident resulted in damage to any personal or public property, or resulted in an injury to the public.

The RPA involved in the incident is automatically grounded until the internal investigation is completed and if required, permission is obtained from FOC. Filing of incident reports with FOC is the responsibility of the SFOC Pilot in command.

Equipment Check List

- ❑ RPAS unit
- ❑ Batteries and charger
- ❑ Controller
- ❑ Tablet or laptop as required
- ❑ Anemometer (if available)
- ❑ Spare Propellers
- ❑ Apple Lightning Cable
- ❑ SD cards
- ❑ SD Card Reader
- ❑ Tablet sun shade
- ❑ Hazard Assessment and Safety Emergency Plan
- ❑ Documents
- ❑ Procedure
- ❑ SFOC
- ❑ RPAS exemptions,(if applicable)

- ❑ Proof of liability insurance,
- ❑ Pilot contact information
- ❑ CFS VNC/VTA (Chart Supplments)
- ❑ Aircraft system limitations (user manual)
- ❑ Sunglasses
- ❑ High-Visibility Vest

Post Flight check list:

- ❑ Post-flight hardware check (rotors, batteries, motors, and control system). Any defective parts or control issues must be reported to the FOC via the online maintenance log.
- ❑ Charge or discharge (for storage) batteries, controller, and peripheral devices for next operation.
- ❑ Record flight log, aerial imagery, and incident reporting.
- ❑ Complete flight logbook entry including Pilot/co-Pilot, RPA serial number, weather, date, time, duration, and location.
- ❑ To avoid fire, serious injury, and property damage, observe the Battery Safety Guidelines outlined by the manufacturer.
- ❑ Maintain the Pilot log.
- ❑ Record flights in the online Flight log/Tracker or as indicated in the manufacturers software.
- ❑ Inform the FOC of flight completion and of any incidents related to the flight.
- ❑ Report any post flight damage or malfunctions to the manufacturer if required.

AIRCRAFT ACTIVITY REPORT

Activity:_____Dated_____20___

Aircraft model:_____reg#_____pilot_____owner_____

Manufacturer_____

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I Certify this aircraft airworthy:

work **performed by:**

- ❑ **Tech** maintenance Initials_____Date_____20_____
- ❑ **Pilot** flight sign off, Initials_____Date_____20_____

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