Normal Operating Procedures

Ref: 901.23 No pilot shall operate a remotely piloted aircraft system unless the following procedures are established:
- normal operating procedures, including pre-flight, take-off, launch, approach, landing and recovery procedures.

Pre-Flight Procedures:
- Follow the pre-flight planning guide.
- Brief flight crew or visual observers of any duties they are to perform or any other information relevant to the flight.
- Determine the acceptability of actual and developing weather conditions for flight.
- Organize and arrange material and equipment in a manner that makes the items readily available.

Take-off Procedures:
- Complete all preflight procedures and visual inspections.
- Ensure the selected take-off site is clear of obstacles and personnel.
- Command the drone to take-off to an appropriate altitude.
- Ensure the drone lifts off and climbs away in a controlled and stabilized manner.
- Note the take-off time.

Launch Procedures:
N/A, no launch system will be utilized.

Approach Procedures:
- Command the drone to proceed to overhead the intended point of landing.
- Ensure the drone approaches overhead the intended point of landing in a controlled and stabilized manner, and slows so as not to overshoot the landing site.
- Ensure obstacle and personnel clearance as the drone approaches overhead the intended point of landing.

Landing Procedures:
(Recovery procedures: N/A, no recovery system will be utilized.)
- Ensure the intended point of landing is clear of obstacles and personnel.
- Ensure the drone is overhead the intended point of landing.
- Command the drone to descend to the landing site.
- Ensure the drone descends at an appropriate rate in a controlled and stabilized manner.
- Note the time of landing and secure the drone.

Emergency Procedures

Ref: 901.23 No pilot shall operate a remotely piloted aircraft system unless the following procedures are established:

- emergency procedures, including with respect to: a control station failure, an equipment failure, a failure of the remotely piloted aircraft, a loss of the command and control link, a fly-away, and flight termination.

Control Station Failure Procedures:

If the failure is on the part of the ground station (i.e. laptop with QGroundControl):

- Immediately take manual control with the handheld transmitter (i.e. the Taranis).
- Once stabilized, command the drone to altitude or position hold as appropriate.
- Attempt to troubleshoot the ground station failure.
- Assess the ability to continue the flight. If unable, discontinue the flight and land.

If the failure is on the part of the handheld transmitter (i.e. the Taranis):

- Maintain positive control of the drone via the ground station.
- Attempt to troubleshoot the handheld transmitter failure.
- If unable to regain functionality of the handheld transmitter, discontinue the flight and land.

Equipment Failure Procedures:

- Assess the nature of the equipment failure.
- If the pilot and crew determine the equipment failure to be a danger to safety of flight – land immediately *(examples of equipment failure that could impact safety of flight: GPS failure, power system failure, radio failure).*
- If the pilot and crew determine that safety of flight is not impacted, assess the controllability of the vehicle. If controllability is in doubt – land immediately *(examples of equipment failure that could impact controllability: intermittent Holybro or X8R radios, motor failure)*.
- If the pilot and crew determine that the flight can be continued, assess the impact of the equipment failure on the mission. Alter mission profile as necessary.

Failure of the Remotely Piloted Aircraft Procedures:

- Maintain visual contact with the drone.
- Identify and record the drone's present position.
- Attempt to maintain control of the drone via any control link (i.e. handheld transmitter or ground station) in any flight mode.
- Attempt to ensure objects and personnel remain clear of potential drone impact.
- Note the position and time of drone impact as applicable.
- Notify the appropriate control facility as applicable.
- File a drone incident report with Transport Canada / TSB as applicable.

Loss of Command and Control Link Procedures:

- Be prepared to take control immediately if at any time the link is restored. Consider landing immediately in this case.
- Maintain visual contact with the drone.
- Identify and record the drone's present position.

- Attempt to regain control of the drone via any control link (i.e. handheld transmitter or ground station) in any flight mode.
- Select an altitude and power setting appropriate for the lost link situation.
- Attempt to troubleshoot the lost link, being sure to consider both the handheld transmitter and the ground control station.
- Perform "fly-away" emergency procedure as applicable.
- Notify the appropriate control facility as applicable.
- File a drone incident report with Transport Canada / TSB as applicable.

Fly-Away Procedures:
Perform the following tasks without undue delay:
    - Identify and record the drone's present position.
    - Identify and record the direction and altitude the drone 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).
- Comply with "Loss of Command and Control Link" procedures.
- Consider flight termination procedures.
- Without delay contact the appropriate control facility to provide information on the "fly away" as applicable.
- File a drone incident report with Transport Canada / TSB as applicable.

Flight Termination Procedures:
Flight termination is a last-resort emergency option to end the drone flight immediately. All motors will cease operation and the drone will fall uncontrolled from its current position to the ground as the flight computer simultaneously turns off all controllers and sets all PWM outputs to their failsafe values. Note that there is **no way to recover** from a flight termination once it is triggered – the vehicle requires a hard reset by disconnecting power before it can be used again.

Consider the following before a flight termination:
    - The safety of personnel and objects in the vicinity of the drone's impact site.
    - Damage that will result to the drone as a result of the flight termination.
    - If flight termination is triggered, file a drone incident report with Transport Canada / TSB as applicable.

Emergency Contact Information:

Transport Canada Aviation Operations Center 24/7 emergency number (for an imminent and immediate threat to aviation and public safety): **1-877-992-6853**
https://tc.canada.ca/en/aviation/aviation-accidents-investigations/emergencies-incident-reporting

Nav Canada 24/7 Flight Operations number (for immediate relay to control facilities): **1-866-WX-BRIEF** (**1-866-992-7433**).

Montreal (CYUL) Tower: **514-633-3311 / 514-633-3312**

Montreal ACC direct line: **1-800-633-1353**.

Quebec FIC direct line**: 1-866-541-4105**.

VHF/UHF guard frequencies (to attempt to reach any control facility or aircraft in range who may be able to relay information): **121.5/243.0** MHz

Transport Canada drone incident report: https://tc.canada.ca/en/aviation/drone-safety/report-drone-incident

For an incident involving serious injury or death or midair collision, also report to the Transportation Safety Board via phone at **819-994-3741** / **1-800-387-3557** as well as online:
https://www.tsb.gc.ca/eng/incidents-occurrence/aviation/index.html