The Process & Importance of Becoming a Licensed Drone Pilot in the Forestry Industry

Flexible, low-cost, and high-resolution remote sensing systems that use drones as platforms are important for filling data gaps and supplementing the capabilities of crewed/manned aircraft and satellite remote sensing systems (Tang and Shao, 2015). That is why over the past few years, drones have become central to the functions of various business and governmental organizations and this trend is expected to keep growing bringing more of these small awesome devices in our national airspace.

Many of us have read the Civil Aviation Authority (CAA) rules for drone enthusiast and skilled operators, but why these rules have been made that way? This brief article will intend to explain the rules and why important to comply with the above mentioned.

The CAA recommend getting some training, so you understand your responsibilities when flying a UAV. These responsibilities are described in the Civil Aviation Rules, Part 101 Subpart F and is summarized as follows (CAA, 2018):

1. *Aircraft must NOT exceed 25kg and must always be safe to operate and well maintained.*
2. *You must take steps to minimize hazards to people, property, and other aircraft.*
3. *Only fly during daylight unless you are doing a shielded operation.*
4. *Give way to all crewed aircraft e.g. planes, helicopters, hang gliders, and paragliders. Land your aircraft immediately if another aircraft approaches.*
5. *You must always be able to see your unmanned aircraft with your own eyes. Do not watch it through binoculars, a monitor or smartphone. Do not fly it behind objects or through or above fog and cloud.*
6. *Fly below 120 metres (400 feet) above ground level.*
7. *Get consent before flying over people and property.*
8. *There are several no-fly zones – check for any airspace restrictions in your area before you fly.*

But why?

Laws and rules are made to be broken, but not for Newton's laws of motion. Putting an object in the air implies a risk of falling because of gravity. Any flying object falling from the sky can have lethal consequences for people and animals underneath it, especially if it is a heavy one (above 25 kg). That is why CAA regulate the weight of the remotely piloted

aircrafts and encourage all operators to ensure the drone is well maintained and in conditions to operate safely.

Visual Inspection on the aircraft before every flight is highly recommended (if not mandatory). During the device inspection we want to search for structure damage in the frame, dirt inside the motor (between the stator and rotors) and search for lumps ("ballooning") in the batteries before inserting them into the drone. After the visual inspection and turning the aircraft on, it is recommended to check all the systems are working properly, check for battery cell deviations, GPS signal, radio signal, anti-collision avoidance systems and perform a low altitude flight.

Along with the aircraft inspection a site inspection it is also necessary to ensure the flight operation is as safe as possible. Two critical hazards with UAV operations must be considered during our site safety assessment: (1) Ground impacts and (2) Mid-air collisions. If a failure occurs on the UAV, there will be uncontrolled ground impacts, these ground impacts can cause fatalities or serious injuries in people located in the site or set fire in highly flammable areas (if the battery gets perforated). Mid-air collisions are highly likely to generate ground impacts along with hazardous consequences derived from the collided object. During the inspection in a forestry area and before the flight operation, it is important to ensure that all members of the crew are in a sheltered area, they can be in their vehicles, inside the crew hut or inside the forest canopy wearing all PPE required. Flammable areas and high objects such as buildings, power pylons and trees must be identified by the operator. During the flight, a sensible distance from high objects must always be kept. Hazard assessment cannot be done in the night as there no visibility to perform a proper inspection.

As drone operators we must be aware that we are sharing the airspace with other types of aircrafts. There are several no-fly zones in the country land as well as other flight operations from different agencies and industries. For a safe UAV flight operation in a crowded airspace, few things must be taken into account: (1) Communicate with others about your flight operation (using the app "air-share" or calling your local air traffic control officers), fly below 400ft to avoid collisions with other aircrafts, (3) Give way to all crewed aircraft and land your UAV a soon as able and (2) Keep a clear line of sight between you and your aircraft.

After this short review into the CAA drone rules, we can emphasize that drone training is important as it gives you the essential techniques you need to carry out drone work. Not only this but it trains you how to be safe whilst flying which is an absolute must.

References:

Civil Aviation Authority (CAA), New Zealand (2018). Part 101 Consolidation - Gyrogliders and Parasails, Unmanned Aircraft (including Balloons), Kites, and Rockets Operating Rules, https://www.aviation.govt.nz/assets/rules/consolidations/Part_101_Consolidation.pdf Tang, L., & Shao, G. (2015). Drone remote sensing for forestry research and practices. Journal of Forestry Research, 26(4), 791-797.