This is a representative sample of an approved waiver application for 14 CFR § 107.35

Small UAS #1 Details

Make: 123 UAS

Model: Octocopter

Small UAS #2 Details

Make: 123 UAS

Model: Octocopter

Small UAS #3 Details

Make: 123 UAS

Model: Octocopter

Small UAS #4 Details

Make: 123 UAS

Model: Octocopter

Waiver Application:

What regulation(s) do you want waived?

107.35: Operation of multiple small unmanned aircraft

Start date: 20XX-11-XX

End date: 20XX-11-XX

Waiver safety explanation:

ABC Drone Services is requesting a waiver to §107.35 in order to operate 4 123 UAS's small unmanned aircraft (sUA) simultaneously for the purpose of monitoring a privately owned 40 acre, fenced in Vineyard measuring XXX feet wide and XXXX feet long, located approximately 5 miles South East of XXXX. All operations will be conducted in Class G airspace, below 400 feet AGL, during daylight hours, and with at least 3 miles visibility. A private non-public use airport is the nearest airport located 4 miles west of the propose operations area. There are no other airports within 5 miles of the proposed operations area. Our operations area consists of flat terrain with no obstructions such as trees or structures. Our proposed operation will require 4 123 UAS's sUA fly simultaneously down the length of the vineyard, these sUAs will be lined up side by side with 50 feet separation between each sUA. Our remote pilot in command (RPIC) will be positioned halfway down the length of the field, with a visual observer (VO) at each end of the field. Our RPIC and VOs will be on a 5 foot high platforms which will enable them to see over the crops, allowing our RPIC and VOs to maintain visual line of sight with each of the sUA. Each small unmanned aircraft utilizes geo fencing to keep the sUA's within the property boundaries of the vineyard, the sUA's will fly a pre-programed flight path down the length of the operational area. At the opposite end of the field the sUA's are programmed to enter a hover until the RPIC takes manual control of each sUA individually. The RPIC will land each sUA in a pre-designated location. We have included an operations manual with our application.

Specific Operation Details:

1. Where do you plan to operate? XXXXX, XXXXXX at Latitude XX.003572 Longitude -XXX.275184 - See Section 1.5.3
2. How high will you fly your aircraft? 400 feet Above Ground Level (AGL) – See Section 1.4.4
3. Do you want to fly in controlled airspace (Class B, C, D, surface E)? No – all flights will be in Class G airspace. – See Section 1.4.8
4. Are there any other kinds of airspace within 5 miles of any planned flight area? No – all airspace within 5 miles is Class G airspace. – See Section 1.4.8
5. What kind of area(s) will you fly over? Unpopulated privately owned, fenced agricultural land – See Section 1.5.3

Small UAS Details:

1. What kind of UAS will you use to fly the operations requested in this application? 123 UAS Octocopter – See Section 1.4.9
2. What is your UAS's power or energy source in flight? lithium polymer battery – See Section 1.4.9
3. What is your UAS's maximum flight time (in minutes), range (in feet), and speed (in miles per hour)? Flight time with payload – 35 minutes, Range – 10032 feet, Maximum Speed – 32 mph – See Section 1.4.9
4. How big is the aircraft? a. Length – 48" b. Width – 48" c. Height – 18" – See Section 1.4.9
5. How do you ensure the aircraft only flies where it is directed (i.e. ensure containment)? "Geo Fencing" – See Section 1.4.4
6. What kind of termination system, if any, does the UAS have? Each sUA is equipped with an immediate flight termination switch – See Section 1.4.4
7. How much will the aircraft and its payload weigh when flying? 6.3lbs (aircraft) + 1.lbs (payload) = 7.4lbs (total weight) – See Section 1.4.4
8. If the aircraft carries any external or internal load (or object), how is the load secured? The payload has 2 pegs that fit into slots in the payload bay under the aircraft, and a latch that secures the payload. The only payloads that will be used are designed/manufactured by 123 UAS and are standard to the 123 UAS Octocopter system. – See Section 1.4.4
9. 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? a. The Sensor payload could theoretically fall off the aircraft in the event the securing latch fails. However, all tests are flown over privately owned, unpopulated, agricultural land so there is no danger of injuring a person or other people's property.

Pilot/Personnel Details:

1. What minimum level of experience will the Remote Pilot in Command (RPIC) have to fly under this waiver?
   RPIC will hold a Part 107 Remote Pilot certificated and have a minimum of 10 hours of flight time on the 123 UAS Octocopter system. RPIC will log 5 hours of operating multi-sUAs flight simulation time on the 123 UAS Mission Control Station (MCS) Simulator prior to actual multi- sUA operations

2. How many personnel (including the Remote PIC) will you use for operations under this waiver (minimum needed)? 3 – A minimum of 1 RPIC and 2 VOs will be used for all operations. – See Section 1.5.1
3. What kind of training, if any, will personnel (e.g. visual observer(s)) have prior to flying under this waiver and how will personnel be trained?
   Prior to commencement of operations, each RPIC and VO will receive training on the regulation contained in Part 107, the limitations of this waiver and proper scanning techniques as described on page 17-23 of the Pilots Handbook of Aeronautical Knowledge (FAA-H-8083-25B). Each RPIC and VO must complete a 20 question test on the above subject matter. This test will be signed, dated and retained on file. Prior to each operation, the RPIC will brief the visual observers on the, location, airspace restrictions, flight plans and discuss each crew members responsibilities.
   How will the Responsible Person know the other personnel are competent and have operational knowledge to safely fly the UAS under the waiver conditions? Each RPIC will hold a Part 107 Remote Pilot certificate and an up-to-date flight log. Each RPIC and VO will have taken the test described above, with that test on file. If personnel will be tested, what kind of testing will be performed, and how will evaluations be conducted and documented? Each RPIC and VO will be require to take a 20 question written test, incorrect answers will be reviewed and discussed until each test can be corrected to 100%. This test will be signed and dated by the student and retained on file.
   How will personnel maintain the knowledge/skill to fly under this waiver? Will recurrent training or testing be required? Prior to performing any multi-sUA operation the RPIC will have logged a minimum of 30 minutes of single-sUAS flight time in the last 60 days and 30 minutes of multi-sUAS simulation time via 123 UAS MCS Simulation in the last 60 days.

Guiding Questions

1. How does the system simultaneously control multiple participating aircraft and avoid collisions between those aircraft? 123 UAS Mission Control Station (MCS) natively supports One-to-Many control – See Section 1.4.3
2. How will the system ensure individual participating aircraft remain contained in the pre-determined operational area? a. A combination of a pre-programed flight path and Geo Fencing will be used – See Section 1.4.4
3. How will the RPIC see and avoid, or detect and avoid, all other aircraft when operation multiple aircraft? Will the proposed operations use a VO(s)? Yes, VOs

will visually scan the operation area and adjacent airspace for unexpected air and ground traffic – See Section 1.5.1

4. How will the RPIC safely stop/terminate all participating aircraft in the event of a hazard? 123 UAS Mission Control Station (MCS) allows the pilot to individually select an aircraft and adjust altitude, command an immediate land, or terminate flight – See Section 1.4.4
5. How will the RPIC know when a single aircraft has failed, and how will the RPIC respond? How will the RPIC respond to multiple aircraft failing at the same time? 123 UAS Mission Control Station (MCS) has a combination of safety features to reduce the risk of both single-aircraft error situations and multi-aircraft error situations. See Section 1.4.3
6. What additional pre-flight safety procedures would the RPIC undergo to ensure safe operation? As described above the RPIC will conduct a preflight safety briefing RPIC on the, location, airspace restrictions, flight plans and discuss each crew members responsibilities. See Section 1.4.8
7. How many command and control links and methods are used in the system? Each aircraft will have their own base-station for command and control. Do the aircraft communicate with each other? If so, what path do the communications follow? No, the aircraft do not communicate with each other. How do the system and/or individual aircraft respond when communications fail? The default behavior is for the aircraft to enter static hover until the C2 link can be reestablished – See Section 1.4.4
8. How will the RPIC maintain a stand-off distance (buffer zone) from non-participating people or property a. A combination of geo fencing and operating over privately owned property will be used. See Section 1.4.4

Other Certificates of Waiver or Authorization

Is there a pending or approved waiver or authorization associated with this proposed operation? No