

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION
CERTIFICATE OF WAIVER

ISSUED TO

Michael Holzwarth
Responsible Person: Michael Holzwarth
Waiver Number: 107W-2024-02995

ADDRESS –

104 Bacon St., Apt. 2
Waltham, MA 02451

This certificate is issued for the operations specifically described hereinafter. No person shall conduct any operation pursuant to the authority of this certificate except in accordance with the provisions contained in this certificate.

OPERATIONS AUTHORIZED

Small unmanned aircraft system (sUAS) operations over human beings; Small unmanned aircraft system (sUAS) operations over moving vehicles

LIST OF WAIVED REGULATIONS BY SECTION AND TITLE

14 CFR § 107.39—Operation over human beings
14 CFR § 107.145—Operations over moving vehicles

STANDARD PROVISIONS

1. A copy of the application made for this certificate shall be attached to and become a part hereof.
2. This certificate shall be presented for inspection upon the request of any authorized representative of the Administrator of the Federal Aviation Administration, or of any State or municipal official charged with the duty of enforcing local laws or regulations.
3. The holder of this certificate shall be responsible for the strict observance of the terms and provisions contained herein.
4. This certificate is nontransferable.

NOTE—This certificate constitutes a waiver of those Federal rules or regulations specifically referred to above. It does not constitute a waiver of any State law or local ordinance.

SPECIAL PROVISIONS

Special Provisions Nos. 1 to 21, inclusive, are set forth on the attached pages.

This Certificate of Waiver is effective from October 08, 2024, to October 31, 2028, and is subject to cancellation at any time upon notice by the Administrator or an authorized representative.

BY DIRECTION OF THE ADMINISTRATOR

Emerging Technologies Division, AFS-700

SPECIAL PROVISIONS ISSUED TO

Michael Holzwarth

General.

The FAA's Flight Standards Service has reviewed your application to ensure compliance with the requirements of 14 CFR § 107.200 and § 107.205. Pursuant to these authorities, the Administrator finds that the proposed small unmanned aircraft (sUA) operation can be conducted safely under the provisions of this Certificate of Waiver (Waiver) as listed below because you have established adequate mitigations for risks involved with operating your sUA in the manner you described. Adherence to the provisions of this Waiver establishes the required level of safety within the national airspace system.

The Administrator may cancel this Waiver at any time. As a general rule, this Waiver may be canceled when it is no longer required, there is an abuse of its provisions, or when unforeseen safety factors develop. Failure to comply with any provision listed below is a violation of the terms of this Waiver and will serve as justification for cancellation.

List of Regulations Waived by Section and Title. The following regulations are waived:

14 CFR § 107.39, Operations over human beings, is waived to allow sUA operations over human beings who are not direct participants, necessary for the safe operation of the small unmanned aircraft.

14 CFR § 107.145, Operations over moving vehicles, is waived to allow sUA operations over moving vehicles occupied by humans.

No part of this waiver will function as an airspace authorization under 14 CFR § 107.41. The FAA's Air Traffic Organization responds directly to requests for such authorizations. The FAA LAANC system cannot be used for waived operations.

Common Special Provisions. The Responsible Person is directly responsible for safety of operations conducted under this Waiver and will ensure the Remote Pilot in Command (remote PIC), manipulator of the controls, and visual observer(s) (VO)¹ comply with all provisions of this Waiver.

1. The Responsible Person listed on the Waiver is responsible to the FAA for the safe conduct of the operations. Prior to conducting operations that are the subject of this Waiver, the Responsible Person:
 - a. Must ensure the remote PIC, manipulators of the controls, and VO(s) are informed of the terms and provisions of this Waiver and strictly observe the terms and provisions herein;
 - b. Must ensure the remote PIC, manipulators of the controls, and VO(s) are informed and familiar with part 107 regulations; and
 - c. Evidence of the above (a and b) must be documented and must be presented for inspection upon request from the Administrator or an authorized representative;

¹ Title 14 CFR § 107.3 defines the term "visual observer." Any VO participating in operations conducted under this Waiver must meet the requirements listed in § 107.33 throughout the duration of flight operations.

2. This Waiver may not be combined with any other waiver(s), authorizations(s), or exemption(s) without specific authorization from the FAA;
3. The FAA has the authority to cancel or delay any or all flight operations if the safety of persons or property on the ground or in the air are in jeopardy or there is a violation of the terms of this Waiver;
4. A copy of this Waiver must be accessible and available to the remote PIC at the ground control station during sUA operations that are the subject of this Waiver;
5. The Responsible Person listed on this Waiver must maintain a current list of pilots by name and remote pilot certificate number used in operations under this Waiver. This list must be presented for inspection upon request from the Administrator or an authorized representative;
6. The Responsible Person listed on this Waiver must maintain a current list of sUA by registration number(s) used in operations under this Waiver. This list must be presented for inspection upon request from the Administrator or an authorized representative;
7. For the purposes of this Waiver, direct participants are the remote PICs, persons manipulating the controls, VOs, and any persons whose involvement is necessary for safety of the sUA operation. All other persons are considered non-participants;
8. If a discrepancy exists between the provisions in this Waiver and the waiver application, the Waiver takes precedence and must be followed;

Waiver Specific Special Provisions sUAS operations may be conducted over human beings and moving vehicles occupied by people provided:

SPECIAL PROVISIONS APPLICABLE TO sUA UP TO AND INCLUDING 0.88 POUNDS

9. The maximum takeoff weight of the sUA and all attachments such as shielding for rotating components (i.e., prop guards), remote ID module, camera, anti-collision lights, and/or payload **must not exceed 0.88 pounds**;

SPECIAL PROVISIONS APPLICABLE TO sUA GREATER THAN 0.88 POUNDS

10. The maximum takeoff weight of the sUA and all attachments such as shielding for rotating components (i.e. prop guards), remote ID module, camera, anti-collision light, parachute recovery system, and/or payload **must not exceed 3.5 pounds (3 pounds, 8 ounces)**;
11. The sUA must be equipped and operated with a Parachute Recovery System (PRS) conforming to the ASTM F3322-18 (or newer) standard.
 - a. The PRS must be maintained per the manufacturers recommended procedures, and safety checked prior to flight;
 - b. The operation over human beings and moving vehicles occupied by people must immediately terminate if the PRS experiences an inflight failure or fails a safety check per the operator's manual;

- c. The sUA must be operated at or above the minimum altitude specified in the PRS operator's manual when the sUA is over human beings and moving vehicles occupied by people; and
- d. The RPIC must have the most recent version of the PRS operator's manual for the PRS being used in their possession, and readily accessible, during the operation. A digital copy of this manual is acceptable for this purpose;

SPECIAL PROVISIONS APPLICABLE TO ALL sUAS

- 12. The sUAS must be equipped and operated with a mechanism to shield or prevent rotating parts from causing lacerations to human skin (e.g., prop guards);
- 13. The sUA must be equipped with anti-collision lighting to increase the conspicuity of the sUA to at least one statute mile for daytime operations and three statute miles for civil twilight and night operations, for collision avoidance purposes;
- 14. Transient operations over moving vehicles occupied by people are prohibited unless:
 - a. The sUA remains within a closed- or restricted-access site and all non-participants in the sUA operation are on notice of the sUAS operation prior to takeoff, or
 - b. For other than closed set operations, sUA operations shall be operated in a manner that minimizes risk to moving vehicles;
 - c. sUA up to and including 0.88 pounds must be operated no lower than fifty feet above ground level (AGL); and
 - d. sUA greater than 0.88 pounds must be operated at or above the minimum altitude specified in the PRS manufacturer's operator's manual;
- 15. Sustained operations over moving vehicles occupied by people are prohibited unless the sUA operation remains within a closed- or restricted-access site and all non-participants in the sUA operation are on notice of the sUAS operation prior to takeoff;
- 16. Operations over people attending sporting events, concerts, crowds, political events, races, controlled access events, and other open-air assemblies of people is prohibited, unless, prior to sUAS operations conducted under this Waiver, the responsible person coordinates the sUAS operations with the event's security planner or venue's designee. For this Waiver, "coordinates" means contacting the venue designee or event's security planner and
 - a. Providing a copy of this Waiver,
 - b. Providing a schedule of planned sUAS operation(s) times,
 - c. Providing the location the remote PIC will be operating the sUAS from,
 - d. Providing the remote PIC's phone number where they can be contacted during sUAS operations, and
 - e. Receiving written confirmation from the event security planner or venue's designee that the above information has been provided to him/her;
- 17. The route of flight must be planned and flown to minimize the time the sUA is over people and moving vehicles occupied by people;

18. Prior to each flight a checklist must be used to aid in identifying potential ground and air hazards along the route of flight and in the immediate vicinity, completed by the RPIC, and briefed to the Visual Observer and the person flying the drone. The checklist must cover the following items at a minimum:
 - a. Identify areas or routes of low-level helicopter and airplane operations such as helipads, grass airstrips, airports, military operations areas below 500 feet above ground level (AGL), tour operator flights, and farmland suitable for ag aircraft operations, within one statute mile of the intended operating area or route;
 - b. Identify locations of expected pedestrian and vehicular traffic in the immediate vicinity of the operating area or route of flight; and
 - c. Identify the highest obstacle or obstruction in the operating area that may be encountered between the takeoff/home location and anywhere along the planned route of flight should a pre-programmed return-to-home (RTH) flight be initiated;
19. Prior to takeoff, the sUAS must be programmed to execute a pre-programmed RTH command if the signal is lost or disrupted for more than 5 seconds. The RPIC shall program a RTH altitude that avoids any obstructions along the RTH route, limited to no higher than 400 feet AGL;
20. At least one VO is required for each operation over people and moving vehicles occupied by people. The VO(s) must understand the general concept of the operation and their specific duties.
 - a. The VO(s) must be positioned where they can immediately alert the RPIC of collision hazards. If the VO(s) is(are) not collocated with the Remote Pilot in Command, the VO(s) must have direct voice communication with the RPIC at all times during the flight.
 - b. If voice communication is lost between the VO(s) and the RPIC, the operation must cease until the communication issue is resolved; and
21. Operations conducted under this waiver are limited to location(s) that meet the performance-based criteria contained in the waiver application.