

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

ISSUED TO

**CAPE Productions Inc., Responsible Person: Louis Gresham
Waiver Number: 107W-2017-02321**

ADDRESS

**822 Cassis Street
Redwood City, CA 94063**

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 standard, special, and common provisions contained in this certificate, and such other requirements of the Federal Aviation Regulations not specifically waived by this certificate.

OPERATIONS AUTHORIZED

First person view (FPV), in lieu of visual line of sight (VLOS), operations by the remote pilot in command (PIC) who is the manipulator of the small unmanned aircraft (sUA) controls. The onsite part 107 certificated airman and Visual Observer, in lieu of the remote PIC, must maintain awareness of the position of the small unmanned aircraft through direct VLOS.

LIST OF WAIVED REGULATIONS BY SECTION AND TITLE

**14 CFR § 107.31 Visual line of sight aircraft operations
14 CFR § 107.33(c) Visual observer**

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 31, inclusive, are set forth on the attached pages.

This Certificate of Waiver is effective from July 26, 2017 to July 31, 2021 and is subject to cancellation at any time upon notice by the Administrator or an authorized representative.

BY DIRECTION OF THE ADMINISTRATOR

General Aviation and Commercial Division, AFS-800

**SPECIAL PROVISIONS ISSUED TO
CAPE PRODUCTIONS INC.**

General.

The FAA's Flight Standards Service has reviewed your application to ensure compliance with the requirements of 14 CFR§ 107.200. The Administrator finds that the proposed small Unmanned Aircraft System (sUAS) 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 the sUAS in the manner you described. Adherence to the provisions of this Waiver establishes a level of safety that ensures safe operations within the national airspace system.

This Waiver may be canceled at any time by the Administrator, the person authorized to grant the Waiver, or the representative designated to monitor a specific operation. 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 may serve as justification for cancellation.

Area Authorized by this Waiver: The listed regulations are waived, to the extent specified by this document, for sUAS system operations within the states and territories of the United States of America.

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

14 CFR § 107.31 sUAS operations visual line of sight aircraft operation, is waived to allow the remote PIC to manipulate the sUAS flight controls without the ability to see the unmanned aircraft throughout the entire flight.

14 CFR § 107.33(c) Visual observer, is waived so the onsite part 107 certificated airman and Visual Observer, in lieu of the remote PIC, maintain awareness of the position of the small unmanned aircraft through direct visual observation.

Common Special Provisions. The Responsible Person is directly responsible for safety of operations conducted under this Waiver and will ensure the remote PIC, on-site PIC, manipulator of the controls, and Visual Observer (VO) complies 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 and VO are informed of the terms and provisions of this Waiver and the strict observance of the terms and provisions herein,
 - b. Must ensure the remote PIC and VO are informed and familiar with part 107 regulations not waived, and

- c. The above must be documented and must be presented for inspection upon request by the Administrator or an authorized representative;
2. This Waiver must not be combined with any other waiver(s), authorization(s), or exemption(s) without specific authorization;
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. The Responsible Person listed on this Waiver must maintain a current list of sUA by registration number(s) used in the Waiver holder's operations. This list must be presented for inspection upon request by the Administrator or an authorized representative;
5. The Responsible Person listed on this Waiver must maintain a current list of pilots by name and remote pilot certificate number used in the Waiver holder's operations. This list must be presented for inspection upon request by the Administrator or an authorized representative;

Visual Line of Sight Operations, and Visual Observer Special Provisions. sUAS operations may be conducted by an offsite manipulator of controls outside the visual line of sight except for launch and recovery, provided:

6. Operations under this Waiver may not be conducted within 5 miles of any airport, heliport, or seaplane base, and are limited to Class G airspace;
7. Only part 107 certificated airmen may manipulate the controls of the sUA under this Waiver;
8. Operations under this Waiver must utilize an onsite (co-located with the sUA) part 107 certificated airman, at least one VO other than the onsite part 107 certificated airman, and a remotely sited part 107 certificated airman designated as remote PIC. The remote PIC must be the manipulator of the controls during operations under this Waiver;
9. The remote PIC must ensure that operations under this Waiver remain within visual line of sight of the onsite part 107 certificated airman and VO at all times;
10. During operations under this Waiver, the onsite part 107 certificated airman may act as remote PIC only for the purposes of training, functional check flights, meeting the requirements of §107.15, and during abnormal and emergency operations;
11. Prior to conducting operations under this Waiver, the remote PIC must establish continuous full-duplex hands-free audio communications with the onsite part 107 certificated pilot and VO. The full-duplex audio communications must occur over an independent transmission and reception system, and not be dependent on the ground station method of data transmission and reception;
12. Prior to operations under this Waiver, all persons who will act as remote PIC, participate in the operation as a part 107 certificated airman, and VO's must participate in a safety briefing that addresses at minimum, the following items:

- a) Designated positions and responsibilities/Crew Resource Management,
 - b) Flight operating area,
 - c) Designated launch and recovery area,
 - d) Verification of geo-fence boundaries,
 - e) Return to Home (RTH) flight profile and course,
 - f) Verification of Descent to Minimum Altitude (DMA) altitude,
 - g) Normal procedures,
 - h) Abnormal procedures, and
 - i) Emergency procedures;
13. Prior to sUAS operations control manipulation under FPV in lieu of VLOS, the onsite part 107 certificated airman must operate the sUA in flight and determine the:
- a) sUA controls respond properly to ground control station commands,
 - b) DMA command operates as programmed as described in the waiver application,
 - c) sUA responds to a geo-fence breach as described in the waiver application,
 - d) sUA responds to loss of control link as described in the waiver application,
 - e) sUA RTH command returns the sUA to the desired landing location, and
 - f) sUA ground station control override operates as described in the waiver application;
14. The onsite and offsite sUAS ground control stations must display in real-time, sUA altitude, sUA position, sUA direction of flight information, sUA flight mode, and which ground station control commands the sUA is responding to. This information must be available at all times to the remote PIC and part 107 certificated airman;
15. The Responsible Person listed on this Waiver must ensure each remote PIC is trained in a manner consistent with how the sUAS will be operated under this Waiver. All training and demonstration for any remote PIC and VO must be documented and made available upon request by the Administrator or an authorized representative. Training operations may only be conducted under the standard requirements of part 107 (without waiver). The training must include:
- a) sUA limitations,
 - b) sUA programming,
 - c) sUA Operational procedures,
 - d) Abnormal and contingency procedures,
 - e) Evasive and Emergency procedures,
 - f) Crew Resource Management,
 - g) sUA flight training,
 - h) A demonstration of sUA ground and flight skills administered by a Cape Productions Inc qualified training pilot;
16. If the remote PIC loses command or control link with the sUA, the sUA must immediately follow a predetermined route and land at the pre-designated location;
17. Communication between the remote PIC, part 107 certificated airman and VO, must

allow for the remote PIC or part 107 certificated airman to maneuver the sUA with sufficient time to:

- a) give way to all other aircraft;
- b) react to any unforeseen operational or mechanical failure without creating a hazard to other people, other aircraft, or property in the event of a loss of control of the sUA for any reason; and
- c) To maintain compliance with this Waiver and un-waived provisions of part 107,

18. Operations conducted subject to this waiver must cease if, at any time:

- a) Safety of human beings or property on the ground or in the air is in jeopardy,
- b) There is a failure to comply with the provisions of this Waiver,
- c) Full-duplex communications cannot be maintained,
- d) sUA onsite loss of control link,
- e) sUA offsite ground station communication link failure,
- f) A non-participating vehicle, aircraft or person enters the designated operating area,
- g) Loss of sUA GPS signal, and
- h) Degraded sUA GPS location information;

19. As described in the wavier application, all sUA operations conducted that are the subject of this Wavier must comply with the currently published version of the manufacturer User Manual;

20. As described in the application for waiver, at no time during operations under this Waiver, may sUA operations exceed a groundspeed of 50 mph;

21. To ensure compliance with § 107.1(a), the remote PIC, the part 107 certificated airman, and the VO must be physically located within the United States;

22. The sUA must have pre-programmed and available contingency and emergency profiles. The sUA ground station displays must audibly and visually alert the remote PIC, certificated part 107 airman, and VO of degraded sUA capability;

23. Prior to operations conducted under this Waiver, the Responsible Person must develop, and the Responsible Person must ensure, the developed operations manual is made available to the Administrator. As described in the Waiver application, the Responsible Person must ensure all operations conducted under this Waiver follow the procedures as outlined in the operations manual. If a discrepancy exists between the provisions in this Waiver and the procedures outlined in the operations manual, the provisions of this Waiver take precedence and must be followed;

24. The operations manual developed by the Responsible Person contains at least the following items:

- a) Operator name, address, and telephone number,
- b) Method of distribution and revision,
- c) Certificate of Waiver. The operations manual must include a copy of the current Waiver(s),
- d) Aircraft description and limitations list by aircraft type and model,
- e) Method to ensure safety of non-participating persons and aircraft,
- f) Safety briefing of Direct Participants,
- g) Direct Participants Minimum Requirements. In accordance with this Waiver, the Responsible Person must specify the minimum requirements for all Direct Participants in the operating manual, and the method used by the Direct Participants to meet those minimum requirements,
- h) Method of communications,
- i) Normal operating procedures,
- j) Abnormal operating procedures,
- k) Emergency procedures,
- l) Crew Resource Management,
- m) Risk management, and
- n) Accident Notification. The operations manual must contain procedures for notification and reporting of accidents in accordance with this Waiver;

25. The Responsible Person must ensure that a copy of the current operations manual, including a copy of this Waiver, are available to the remote PIC, onsite part 107 certificated airman and VO during sUAS operations that are the subject of this Waiver;

26. The Responsible Person may update or revise the operation manual. The responsible person must ensure tracking of manual revisions, all manuals used or referenced for operations conducted under this Waiver are updated, and revised manuals are submitted to the Administrator. If the Responsible Person or Administrator determines that any update or revision would affect the basis for which the FAA granted this Waiver, then the Responsible Person must apply for an amendment to their Waiver;

27. As describe in the waiver application, the Responsible Person must maintain the sUAS and its components in accordance with manufacturer's instructions and recommendations. The aircraft manufacturer may provide the maintenance program, or if one is not provided, the Responsible Person must develop a maintenance program prior to conducting operations that are the subject of this Waiver. sUA maintenance includes scheduled and unscheduled overhaul, repair, inspection, modification, replacement, and system software upgrades of the sUAS and its components necessary for flight. A log of all maintenance performed must be kept for each aircraft operated under this waiver, and available to the remote PIC to review prior to operations conducted that are the subject of this waiver. Each sUA maintenance log must be presented to the Administrator when requested. These procedures must be added to the Cape Productions Inc. operations manual;
28. Each sUA operated under this Waiver must comply with all manufacturer safety bulletins, safety guidelines, software updates, and maintenance requirements or recommendations;
29. Any sUAS that has undergone maintenance must undergo a functional test flight prior to conducting operations under this Waiver. A log entry must be made for each functional test flight. The log entry must contain at minimum the:
 - a) Calendar date,
 - b) sUA registration number,
 - c) Remote PIC who performed the functional test flight,
 - d) Duration of the flight, and
 - e) the result of the functional flight test;
30. Flight operations recordkeeping requirements. Records shall be retained for a period of 90 days after the expiration date of the Waiver. The Responsible Person shall keep at its principal business office or at other places approved by the Administrator, and provide the Administrator on a monthly basis by email to 9-AFS-800-Part107Reports@faa.gov the following:
 - a. For each sUA flight conducted under the terms of this waiver-
 - a. Registration number of the sUA,
 - b. Make and model of the sUA,
 - c. Name and certificate number of the remote PIC,
 - d. Name of the VO,
 - e. Name of the Enterprise client sUA flight operations performed for,
 - f. Name and certificate number of the onsite part 107 certificated airman,
 - g. Location of the remote PIC during the sUA flight,
 - h. Location of the sUA, and
 - i. Duration of the sUA operation;
 - b. sUA equipment malfunctions. Reportable sUA equipment malfunctions include, but are not limited to the following:
 - a. On-board flight control system,
 - b. Any portion of the navigation system to include GPS functionality,

- c. Power plant malfunction or failure,
 - d. Battery malfunction or failure,
 - e. Electrical power system malfunction or failure, and
 - f. Control station malfunction or failure,
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- c. Collision with an object located on, or attached to the ground, or in the air,
 - d. Ground impact resulting in any damage to the sUA or its payload,
 - e. List and description of any incident or accident that occurred while operating under the terms and conditions of this waiver, regardless if they meet part 107 reporting requirements,
 - f. Number of lost link and control override events,
 - g. Number of interrupted full-duplex communications;
31. The Responsible Person must establish and maintain a Safety Management System (SMS) appropriate for the size, scope, and complexity of the waived operation. Guidance on establishing and maintaining an SMS is available in FAA Advisory Circular 120-92B. This program must be made available upon request by the Administrator or an authorized representative.