U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

CERTIFICATE OF WAIVER

Issued to: Greenman-Pedersen, Inc.
Responsible Person: William Orsinger
Waiver Number: 107W-2019-04805

Address:
11000 Broken Land Pkwy Ste 500
Columbia, MD 21044

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

OPERATIONS AUTHORIZED

Small unmanned aircraft system (sUAS) operations over human beings.

LIST OF WAIVED REGULATIONS BY SECTION AND TITLE

14 CFR § 107.39(a) — Operation Over Human Beings

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

This Certificate of Waiver is effective from October 10, 2019 to October 31, 2023, and is subject to cancellation at any time upon notice by the Administrator or an authorized representative.

BY DIRECTION OF THE ADMINISTRATOR

JOSEPH V FAGAN JR

Digitally signed by JOSEPH V FAGAN JR
Date: 2019.10.11 05:51:04 -04'00'

General Aviation and Commercial Division, AFS-800

SPECIAL PROVISIONS ISSUED TO

Greenman-Pedersen, 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 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 your sUAS in the manner you described. Adherence to the provisions of this Waiver establishes the required level of safety within the national airspace system.

This Waiver may be canceled at any time by the Administrator, the person authorized to grant the Waiver, or a 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.

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

> **14 CFR § 107.39(a)**, 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.

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 such requests.

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 (PIC), manipulator of the controls, and Visual Observer (VO) [1] 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, manipulators of the controls, and VO are informed on the terms and provisions of this Waiver and the strict observance of the terms and provisions herein;
    b. Must ensure the remote PIC, manipulators of the controls, and VO are informed and familiar with part 107 regulations not waived; 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 must 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 Pilot in Command (remote PIC) at the ground control station during sUAS 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 the Waiver holder's operations. 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 small unmanned aircraft (sUA) by registration number(s), and parachutes by serial number, used in the Waiver holder's operations. 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 pilots in command (PICs), persons manipulating the controls, visual observers (VOs), and any persons whose involvement is necessary for safety of the sUAS operation. All other persons are considered non-participants;

Waiver Specific Special Provisions. sUAS operations may be conducted under this waiver over human beings provided:

OPERATIONAL PROVISIONS

8. All operations conducted under this Waiver must use one or more VO;

9. All individuals directly participating in the operation of the sUAS must be easily identifiable visually (e.g., apparel, safety vests);

10. Prior to conducting operations over persons that are the subject of this Waiver, the Remote PIC must verify the parachute system serial number installed on the sUA to be operated over persons, is listed in the SafeAir Phantom Product Safety & Compliance Document. This document must be in the remote PIC's physical possession or readily accessible on an electronic device in the remote PIC's physical possession during sUAS operations that are the subject of this Waiver. This document must be presented for inspection upon request by any law enforcement official, Administrator, or an authorized representative. If the sUAS make/model and parachute make/model are the same as described in the waiver application, a new or amended Waiver application is not required for each additional serial numbered parachute meeting the ASTM 3322-18 standard added to the SafeAir Phantom Product Safety & Compliance Document;

11. Within the previous 7 calendar days prior to operations over human beings, the responsible person and remote PIC must have verified the ParaZero SafeAir Phantom parachute system has no known safety defects that would alter the efficacy or safety of the parachute system while operating the sUA over human beings;

12. The Responsible Person must establish and maintain a Safety Management System (SMS) appropriate for the size, scope, and complexity of the waivered operation. Guidance on establishing and maintaining an SMS is available in FAA Advisory Circular 120-92B (as amended). This program must be made available upon request by the Administrator;

13. 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 and in operational procedures including evasive and emergency maneuvers. Training operations may only be conducted under the standard requirements of part 107 (without waiver). Training during operations over human beings is prohibited;

14. Launch and recovery areas for normal and abnormal operations must be designated and marked to keep any human being not a direct participant out of the areas prior to, during, and immediately following flight operations;

15. If the remote PIC loses command or control link with the sUA, the sUA must follow a predetermined route to either reestablish link or immediately recover/land within the designated launch and recovery area(s);

16. The remote PIC is responsible for halting or canceling operations if, at any time, the safety of human beings or property on the ground or in the air is in jeopardy, or if there is a failure to comply with the provisions of this Waiver;

17. 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 or authorized representative, and shall make available for inspection by the Administrator or an authorized representative the following:

    a. For each sUA flight conducted under the terms of this waiver:
        i. Date and location of operation
        ii. Registration number of the sUA and serial number of installed parachute system,
        iii. Number of flights,
        iv. Make and model of the sUA,
        v. Name and certificate number of the remote PIC,
        vi. Name and certificate number (if applicable) of the Visual Observer, and
        vii. Duration of the sUA operation;

    b. sUA equipment malfunctions. sUA equipment malfunctions include, but are not limited to, the following:
        i. Onboard flight control system,
        ii. Any portion of the navigation system to include GPS functionality,
        iii. Power plant malfunction or failure,
        iv. Battery malfunction or failure,
        v. Electrical power system malfunction,
        vi. Control station malfunction or failure, and
        vii. Loss of control link within the sUAS;

18. Within 72 hours of any parachute deployment or a sUA failure where the parachute did not deploy as designed, an email must be sent to 9-afs-820-Part107Reports@faa.gov . The email must include at least:

    a. Date, time, and location of parachute deployment or failure to deploy,
    b. A description of events leading up to the parachute deployment or failure to deploy,
    c. The serial number of the parachute,
    d. Name of the remote PIC,
    e. If the sUA impacted a person, and
    f. Any injuries caused to a person;

19. For operations conducted under this Waiver, the maximum weight of the sUA, including everything that is on board or otherwise attached to the aircraft, may not exceed 3.55 pounds;

20. During sUAS operations subject to this Waiver, the only payload that may be carried by, or attached to the sUA in flight, is a camera or other optical sensor. The sUA may not operate with any other payload or object attached to or contained within the sUA;

21. sUAS operations conducted in accordance with this Waiver must adhere to all manufacturer guidelines, recommendations and limitations for the sUAS and ParaZero SafeAir Phantom parachute system;

22. Operations conducted under this Waiver may occur when the ParaZero SafeAir Phantom system is installed on a DJI Phantom 4 sUA in accordance with the instructions provided by the ParaZero SafeAir Phantom user manual. Proposed operations of any other manufacturer, model of sUA, or parachute system will require a new waiver application or a request to amend this Waiver;

TECHNICAL PROVISIONS

23. Any modification to the sUAS or ParaZero SafeAir Phantom parachute is prohibited. Repair and replacement of damaged sUA components is allowed with a replacement part that is exactly the same as the original. No substitutions are allowed unless a new waiver application is submitted;

24. If deployed for any reason, prior to a flight conducted under the terms and conditions of this Waiver, the ParaZero SafeAir Phantom parachute must be repacked by the manufacturer or a designated representative;

25. For sUAS operations where GPS signal is necessary to safely operate the sUA, the remote PIC must immediately recover/land the sUA upon loss or degraded of GPS location information;

26. If communication between the VO and the remote PIC is by use of an electronic device;

    a. The device must be full duplex,
    b. The remote PIC's device must be hands-free, and
    c. There must be a reliable back-up communication method;

27. ADS-B out (1090/978 MHz) may not be transmitted from the sUAS when operating pursuant to this Waiver;

28. All emitters used in sUAS must be in compliance with all applicable FCC regulations and all provisions of the FCC authorization granted for the emitter. A FCC experimental authorization may not be used for sUAS operations under this Waiver;

ENVIRONMENTAL PROVISIONS

29. During sUA operations over non-participants, the ParaZero SafeAir Phantom parachute system must be operational and comply with the ASTM 3322-18 standard as described in the waiver application;

30. The sUA may not be operated lower than 63 feet over any non-participant;

31. sUAS operations over open air assemblies of persons is prohibited, unless, prior to sUAS operations pursuant to this Waiver, the responsible person coordinates the sUAS operations with the event's security planner. For this Waiver, coordinates means contacting the 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. Received written confirmation from the event security planner the above information has been provided to him/her.

    If the event does not have a security planner or security present, the above does not have to be completed prior to operations over open air assemblies of persons; and

32. sUAS operations over moving vehicles is prohibited.