

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

CERTIFICATE OF WAIVER

Issued To: Boyd Instrument & Supply Co., Inc
Responsible Person: Roy Boyd
Waiver Number: 107W-2019-04914

Address:
443 B Easton Road
Horsham, PA 19044

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(b) — 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 29, inclusive, are set forth on the attached pages.

This Certificate of Waiver is effective from December 04, 2019, to December 31, 2023, 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
Boyd Instrument & Supply Co., 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 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.

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

14 CFR § 107.39(b), No person may operate a small unmanned aircraft over a human being unless that human being is located under a covered structure or inside a stationary vehicle that can provide reasonable protection from a falling small unmanned aircraft, is waived to the extent necessary to allow operations over moving vehicles in a controlled access site.

Common Special Provisions. The Responsible Person is directly responsible for safety of operations conducted under this Waiver and will ensure the remote PIC, manipulator of the controls, and VO(s)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;
2. This Waiver may not be combined with any other waiver(s), authorization(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;

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.

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 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 small unmanned aircraft (sUA) by registration number(s) 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 over vehicles that are not stationary may be conducted under this waiver when the operation complies with the following provisions:

OPERATIONAL PROVISIONS

8. All operations under this Waiver must use one or more VO;
9. 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 (or latest revision). This program must be made available upon request by the Administrator;
10. 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 upon request. 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;

11. The operations manual contains at least the following items:
 - a. Operator name, address, and telephone number,
 - b. Method of manual 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 Participant 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 14 CFR § 107.9 and NTSB 830;
12. The Responsible Person must ensure that a copy of the current operations manual is available to the remote PIC and all other direct participants during sUAS operations that are the subject of this Waiver. A definition of direct participant can be located in AC107-2;
13. The Responsible Person may update or revise its operations manual. The Responsible Person must track such revisions and present revised documents to the Administrator or an authorized representative upon request. The Responsible Person must also present revised documents when applying for extension of or amendment to this Waiver. If any revision to the manual would be contrary to the information provided in the waiver application or obviate a condition or limitation of this waiver, then the Responsible Person must apply for an amendment to this Waiver;
14. 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. A flight demonstration, administered by the Responsible Person must be successfully completed and documented. All training and demonstration for any remote PIC and VO must be documented and available upon request by the Administrator or authorized representative. Training operations may only be conducted under the standard requirements of part 107 (without waiver). Training during operations over moving vehicles is prohibited;
15. 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;
16. 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 closed or restricted-access site;

17. 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;
18. Individuals directly participating in the operation of the sUAS must be easily identifiable visually (e.g., apparel, safety vests);
19. 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 provide the Administrator on a monthly basis by email to 9-AFS-820-Part107Reports@faa.gov, 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,
 - 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,
 - vii. Location of the remote PIC during the sUA flight,
 - viii. Location of the sUA, and
 - ix. 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;

TECHNICAL PROVISIONS

20. sUAS operations conducted in accordance with this Waiver must adhere to all manufacturer guidelines, recommendations and limitations for the sUAS;
21. Operations conducted under this Waiver may occur only with the make and model of sUA as described in the waiver application. Proposed operations of any other manufacturer or model of sUA will require a new waiver application or an application to amend this Waiver;
22. Any modification to the sUAS design is prohibited; repair and replacement of damaged components is allowed with a replacement part that is exactly the same as the original;

23. The Responsible Person must maintain the sUAS and its components in accordance with manufacturer's instructions. The aircraft manufacturer may provide the maintenance program, or, if one is not provided, the Responsible Person must develop one prior to performing sUA operations that are the subject of this Waiver. sUAS maintenance includes scheduled and unscheduled overhaul, repair, inspection, modification, replacement, and system software upgrades of the sUAS and its components necessary for flight. These procedures must be added to the operations manual. A log of all maintenance performed must be kept for each aircraft operated under this waiver. This log must be available to the remote PIC for review prior to conducting operations that are the subject of this waiver. Each sUA maintenance log must be presented to the Administrator when requested. Records of this maintenance must be retained for 90 days after the expiration date of the Waiver;
24. 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;
25. Functional test flights may only be conducted by Direct Participants. The functional test flight may only be conducted under the standard requirements of part 107 (without waiver). Functional test flights during operations over human beings or moving vehicles are prohibited;
26. 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 GPS location information;
27. If communication between the VO and the remote PIC is by use of an electronic device;
 - a. The device must be continuous full duplex,
 - b. The remote PIC's device must be hands-free, and
 - c. There must be a reliable back-up communication method;

ENVIRONMENTAL PROVISIONS

28. Prior to conducting operations under this Waiver, the operational area boundaries must be identified and restricted to access as described in the waiver application. During operations, the flight operations area must be monitored as described in the waiver application; and
29. Operations conducted under this Waiver are limited to the locations described in the waiver application as Toland PA, Locust Point PA, Camp Hill, PA and Steelton, PA.