

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

ISSUED TO

**The Pennsylvania State University**  
**Responsible Person: Lee-Roy Haarhaus**  
**Waiver Number: 107W-2024-03944**

ADDRESS –

**101 Technology Center**  
**Office for Research Protections**  
**State College, PA 16802**

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

sUAS operations higher than 400 feet above ground level, when not within a 400 foot radius of a structure.

LIST OF WAIVED REGULATIONS BY SECTION AND TITLE

**14 CFR § 107.51(b)—Operating limitations for small unmanned aircraft - Altitude**

**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 18, inclusive, are set forth on the attached pages.

This Certificate of Waiver is effective from February 4, 2025, to January 31, 2027, and is subject to cancellation at any time upon notice by the Administrator or an authorized representative.

**BY DIRECTION OF THE ADMINISTRATOR**

FAA Eastern Service Center  
(Region)

For Andreesse Davis, PMP (A)  
(Signature)

Tactical Operations Team Manager, AJV-E23  
(Title)

**SPECIAL PROVISIONS ISSUED TO**  
**The Pennsylvania State University**

**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 § 107.51(b), Operating limitations for small unmanned aircraft - Altitude, is waived to allow sUAS operations higher than 400 feet above ground level (AGL), not to exceed 2,000 feet AGL.

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.

**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)<sup>1</sup> 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;

---

<sup>1</sup> 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 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;

**Operations higher than 400 feet AGL Special Provisions** sUAS operations may be conducted above 400 feet AGL, not to exceed 2,000 feet AGL, provided:

9. Operations may not be conducted at night or during civil twilight, as defined in 14 CFR § 1.1 and § 107.29(c), respectively;
10. Visual Observers: All operations conducted under this Waiver must use one or more VO as described in the waiver application:
  - a. All VOs must receive documented training for their duties and responsibilities to include;
    - 1) Scanning of the Operational Volume for Air and Ground based intruders;
    - 2) Communications procedures and phraseology;
    - 3) Overall operations conducted under this Waiver;
  - b. Sufficient VO(s), defined as the minimum number of VO(s) required to continuously observe at least a 2 statute mile radius of airspace surrounding the sUA in flight, are;
    - 1) Used to identify any non-participating aircraft prior to their entry into the planned operational area;
    - 2) Physically located such that the remote PIC receives sufficient notice to ensure the UA remains well clear of all other aircraft;
    - 3) Physically located to notify the remote PIC of any moving vehicle or human presence that may pose a hazard to the operation;
  - c. Communication between the remote PIC and VO must occur to facilitate, when necessary, for the remote PIC taking action to maneuver the sUA with sufficient time to:
    - 1) Give way to all other aircraft in accordance with § 107.37;
    - 2) 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; and
    - 3) Maintain compliance with this Waiver and un-waived provisions of part 107;
  - d. If communication between the VO and the remote PIC will occur by electronic device:
    - 1) The device must be continuous full-duplex;
    - 2) The remote PIC must be able to use the device hands-free; and
    - 3) There must be a reliable back-up communication method;

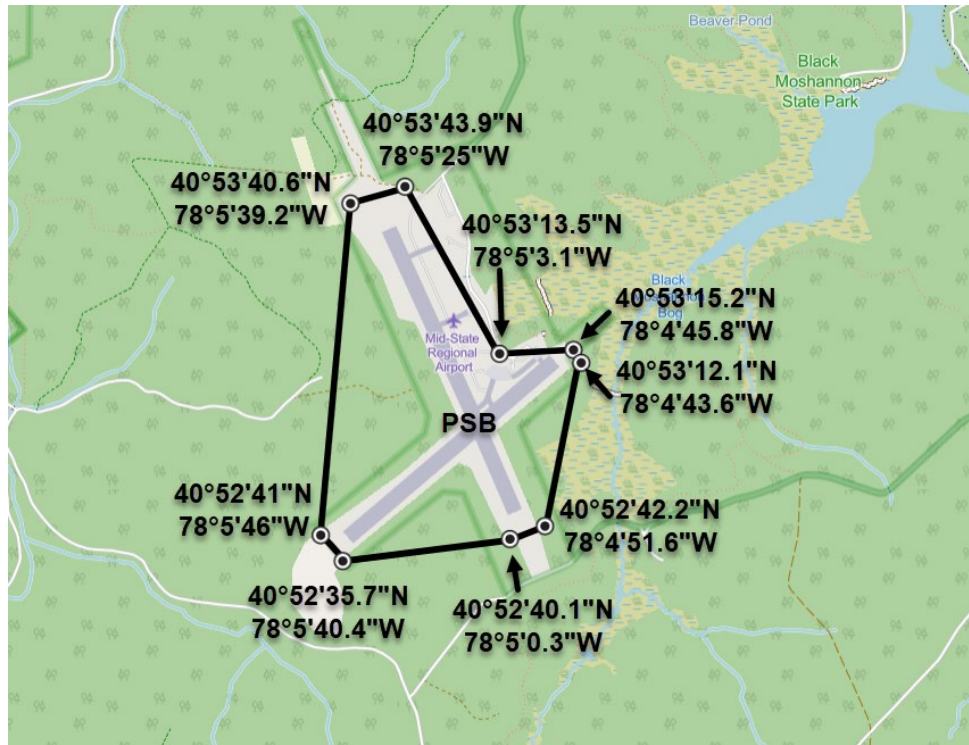
11. Operations Manual: The Responsible Person must update or revise the operations manual (aka CONOPs) submitted with the Waiver application for changes in the operation. The Responsible Person must track such revisions and present revised documents to the Administrator or an authorized representative 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;
12. Ground Control Station, Control and Communications (C2) System:
  - a. Telemetry: The sUAS ground control station must display in real-time the sUA altitude, position, direction of flight, ground speed, C2 signal strength, battery condition, and sUA distance from the control station as described in the Waiver application;
  - b. Alerting: The remote PIC must ensure the GCS is configured to audibly and/or visually alert the remote PIC of degraded system performance, geofence loss of containment, loss of Control link with the sUA, and intrusion alerts as described in the Waiver application;
  - c. Emergency Profiles: The remote PIC must ensure the GCS is configured for automated emergency actions (e.g. RTL/RTH, altitude descend, position hold etc.) as described in the Waiver application; and
  - d. Sensors: the remote PIC must ensure any installed collision/obstacle avoidance sensors are operational;
13. The Responsible Person must contact the Operations Manager at New York Air Route Traffic Control Center (ZNY ARTCC) at 631-468-5959 and advising of the activation of the UAV Waiver at KPSB airport with start and stop times at least fifteen (15) minutes prior to the commencement of operations.
14. NOTAM: The Responsible Person must file a Notice to Air Mission (NOTAM) no more than 72 hours and no less than 24 hours prior to operating under this waiver. A NOTAM can be filed by calling 1-877-487-6867 (1-877-4-US-NTMS). The Responsible Person must verify the NOTAM has been issued prior to conducting waived operations;
15. ADS-B out (1090/978 MHz) may not be transmitted from the sUAS when operating pursuant to this Waiver. An ADS-B in Receiver must be operational and monitored during all operations pursuant to this Waiver;
16. Anti-Collision Lighting: The sUA must be equipped with anti-collision lighting to increase the conspicuity of the sUA to 1 statute mile for daytime operations;
17. UAS Maintenance: All sUAS operations conducted in accordance with this Waiver must comply with all manufacturer recommendations and limitations for the sUAS:
  - a. The Responsible Person must maintain each sUAS and its components in accordance with manufacturer's instructions and recommendations. sUAS maintenance includes scheduled and unscheduled overhaul, repair, inspection, modification, replacement, and system software upgrades of the sUAS and its components necessary for flight;
  - b. 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 sUAS maintenance log must be presented to the Administrator when requested. The log must contain the following information for each maintenance activity:
    - 1) A description (or reference data acceptable to the Administrator) of work performed;
    - 2) The date of completion of the work performed;

- 3) The name of the person who performed the work; and
- 4) The signature of the person who performed the work;
- c. Any sUAS that has undergone maintenance must undergo a functional test flight prior to conducting operations under this Waiver. The functional test flight may only be conducted under the standard requirements of part 107 (without waiver). A log entry must be made for each functional test flight.

The log entry must contain at minimum the:

- 1) Calendar date;
  - 2) sUA registration number;
  - 3) Remote PIC who performed the functional test flight;
  - 4) Duration of the flight; and
  - 5) The result of the functional flight test;
18. All emitters used in sUAS must be compliant with all applicable FCC regulations provisions of the FCC authorization granted for the emitter. A FCC Experimental authorization may not be used for sUAS operations under this Waiver; and
19. Operations Area: Operations conducted under this Waiver are limited to the location(s) as described on Attachment 1.

Location: Within the Black Polygon Depicted Directly Below



Certificate of Waiver Number 107W-2024-03944