

DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

CERTIFICATE OF WAIVER OR AUTHORIZATION

ISSUED TO

Principia, Inc., Section 333 Exemption #11633

1 Jefferson Road
Parsippany, NJ 07054

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

Operation of the 3 D Robotics Solo Unmanned Aircraft System (UAS) in Class D airspace, below 300 feet AGL in the vicinity of Teterboro, NJ, under the jurisdiction of Teterboro Airport Traffic Control Tower (ATCT) for the purpose of aerial data collection. See Attachment 1.

LIST OF WAIVED REGULATIONS BY SECTION AND TITLE

N/A

STANDARD PROVISIONS

1. A copy of the application made for this certificate shall be attached and become a part hereof.
2. This certificate shall be presented for inspection upon the request of any authorized representative 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 are set forth and attached.

This certificate 2015-ESA-11633-140-333E is effective from March 15, 2016, to May 31, 2017, and is subject to cancellation at any time upon notice by the Administrator or his/her authorized representative.

BY DIRECTION OF THE ADMINISTRATOR

FAA Headquarters, AJV-115
(Region)

March 14, 2016
(Date)


Scott J. Gardner
(Signature)

Acting Manager, UAS Tactical Operations Section
(Title)

STANDARD PROVISIONS

A. General.

1. This COA is effective only with an approved (signed and dated) Section 333 exemption document.
2. A copy of the COA including the special limitations must be immediately available to all operational personnel at each operating location whenever UAS operations are being conducted.
3. All personnel connected with the UAS operation must maintain strict compliance with the contents of this authorization and the conditions and limitations within the applicable exemption.
4. This authorization may be canceled at any time by the Administrator, the person authorized to grant the authorization, or the representative designated to monitor a specific operation. As a general rule, this authorization 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 the authorization is cause for cancellation. The proponent will receive written notice of cancellation.
5. The proponent must comply with the aircraft registration requirements set forth in Title 14 Code of Federal Regulations § 47.3 prior to conducting flight operations authorized under this COA. Refer to United States Code Title 49 §§ 44101-44104 for law requiring aircraft registration in the United States.

B. Safety of Flight.

1. The proponent or delegated representative is responsible for halting or canceling activity in the COA area if, at any time, the safety of persons or property on the ground or in the air is in jeopardy, or if there is a failure to comply with the terms or conditions of this authorization.
2. ATC must be immediately notified in the event of any emergency, loss and subsequent restoration of command link, loss of PIC or observer visual contact, or any other malfunction or occurrence that would impact safety or operations.
3. Visual observers must be used at all times and the PIC is responsible to ensure visual observers are:
 - a. Able to see the aircraft and the surrounding airspace throughout the entire flight, and
 - b. Able to provide the PIC with the UA's flight path, and proximity to all aviation activities and other hazards (e.g., terrain, weather, structures) sufficiently to exercise effective control of the UA.

4. Observers must be able to communicate clearly to the pilot any instructions required to remain clear of conflicting traffic, using standard phraseology as listed in the Aeronautical Information Manual when practical.
5. Pilot and observers must not assume concurrent duties as both pilot and observer.
6. The required number of ground observers will be in place during flight operations.
7. The use of multiple successive observers (daisy chaining) is prohibited unless otherwise authorized as a special provision.

C. Notice to Airmen (NOTAM).

1. A distance (D) NOTAM must be issued when unmanned aircraft operations are being conducted. This requirement may be accomplished
 1. Through the proponent's local base operations or NOTAM issuing authority, or
 2. By contacting the NOTAM Flight Service Station at 1-877-4-US-NTMS (1-877-487-6867) not more than 72 hours in advance, but not less than 48 hours prior to the operation, unless otherwise authorized as a special provision. The issuing agency will require the:
 - a. Name and address of the pilot filing the NOTAM request
 - b. Location, altitude, or operating area
 - c. Time and nature of the activity.
2. The NOTAM must be filed to indicate the specific area and periods of UA activity. NOTAMs for generalized, wide-area, or continuous periods are not acceptable.
3. The NOTAM must be cancelled when UAS operations are terminated.

D. Communication Requirements.

1. The pilot and/or PIC will maintain direct, two-way communication with ATC and have the ability to maneuver the unmanned aircraft in response to ATC instructions, unless addressed in the Special Provision Section.
2. When required, ATC will assign a radio frequency for air traffic control during flight. The use of land-line and/or cellular telephones is prohibited as the primary means for in-flight communication with ATC.

E. Reporting Requirements:

1. Documentation of all operations associated with UAS activities is required regardless of airspace in which the UAS operates. **NOTE:** Negative (zero flights) reports are required.
2. The proponent must submit the following information through 9-AJV-115-UASOrganization@faa.gov on a monthly basis:

- a. Name of Operator, Exemption number, and aircraft registration number
- b. UAS type and model
- c. All operating locations to include location city/name and latitude/longitude
- d. Number of flights (per location, per aircraft)
- e. Total aircraft operational hours
- f. Takeoff or Landing damage
- g. Equipment malfunctions. Reportable malfunctions include, but are not limited to the following:
 - (1) On-board flight control system
 - (2) Navigation system
 - (3) Power plant failure in flight
 - (4) Fuel system failure
 - (5) Electrical system failure
 - (6) Control station failure
- h. The number and duration of lost link events (control, performance and health monitoring, or communications) per aircraft per flight.

AIR TRAFFIC CONTROL SPECIAL PROVISIONS

A. Coordination Requirements.

1. As soon as practical but no later than one (1) business day (Mon-Fri, excluding holidays) prior to operations, the proponent will coordinate UAS activity with Teterboro (TEB) ATCT via email to: Gary.Palm@faa.gov and Larry.Brady@faa.gov.
2. The proponent shall provide the following information:
 - a. Schedule of flight operations
 - b. Location of operation
 - c. NOTAM number filed
 - d. Type and N-number of UAS to be flown
 - e. A name and phone number for a POC who will be on-site during UAS operations
3. One hour prior to operations, the proponent will contact TEB ATCT by phone at 201-288-1889/5988 to verify UAS operational details have been received.
4. The PIC will notify ATC when flight operations have been completed or terminated.

B. Communication Requirements.

The PIC will maintain communication with TEB ATCT on frequency 119.5 during all operations.

C. Flight Planning Requirements.

1. When necessary, transit of airways and routes must be conducted as expeditiously as possible. The unmanned aircraft must not loiter on Victor airways, jet routes, Q and T routes, IR routes, or VR routes.
2. Special Visual Flight Rules (VFR) operations are not authorized.
3. Operations (including lost link procedures) must not be conducted over populated areas, heavily trafficked roads, or an open-air assembly of people except as authorized in the FAA Grant of Exemption.

D. Procedural Requirements.

1. Prior to beginning operation, the PIC shall contact TEB ATCT on 119.5 and request approval to begin operations.
2. The UA must remain clear and yield the right of way to all other manned operations and activities at all times (including, but not limited to, ultralight vehicles, parachute activities, parasailing activities, hang gliders, etc.).
3. UA operations must not impede, delay, or divert manned operations.
4. The PIC must not conduct concurrent or simultaneous UAS operations in the presence of manned aircraft.
5. Operations will be terminated immediately if directed by ATC.
6. The proponent must be aware of, and operate in accordance with, the provisions of FDC NOTAM 4/3621 – Special Security Notice Sporting Events. UAS operations are NOT authorized within Temporary Flight Restrictions in effect at Met Life Stadium (40°48'49"N 074°04'28"W) during New York Giants and New York Jets events.

E. Emergency/Contingency Procedures.

1. Lost Link Procedures:
 - a. In the event of a lost link, the UAS will comply with the following provisions:
 - (1) The UA Loiters at the lost link point for up to 1 minute, then climbs or descends to an altitude of 30 feet, then proceeds to launch point to auto-land.
 - (2) The unmanned aircraft lost link route will not transit or orbit over populated areas.
 - (3) Lost link programmed procedures will avoid unexpected turn-around and/or altitude changes and will provide sufficient time to communicate and coordinate with ATC.
 - (4) Lost link orbit points shall not coincide with the centerline of Victor airways.

2. Lost Communications:

- a. If communication is lost between CDW ATCT and the PIC, the UA will be forced into the Lost Link profile to land and operations will be terminated.
- b. In the event of any loss of communication ability between PIC and observer, the UA will be forced into the Lost Link profile to land and operations will be terminated.

3. Emergency or Fly-Away Procedures:

In the event of a Fly-Away or other emergency scenario, the PIC will immediately advise CDW ATCT, state pilot intentions, and provide the following:

- a. The nature of the emergency
- b. UAS last know position, altitude, and direction of flight
- c. Maximum remaining flight time

F. Operations Area. See Attachment 1.

1. Operations are to remain:

- a. below **300** feet AGL and
- b. Within a TEB Class D airspace **excluding** that area within **2nm** of 405100N0740340W, the Teterboro Airport.
- c. Over private or controlled-access property with permission from the property owner/controller in accordance with the FAA Grant of Exemption

2. UAS operations are not authorized within 2 nm of TEB.

AUTHORIZATION

This Certificate of Waiver or Authorization does not, in itself, waive any Title 14 Code of Federal Regulations, nor any state law or local ordinance. Should the proposed operation conflict with any state law or local ordinance, or require permission of local authorities or property owners, it is the responsibility of Principia, Inc. to resolve the matter. This COA does not authorize flight within Special Use airspace without approval from the controlling agency. Principia, Inc. is hereby authorized to operate the 3 D Robotics Solo Unmanned Aircraft System in the operations areas depicted in the Activity section of the attachment.

Attachment 1

Operating Area: TEB Class D

Operations **not authorized** within 2 nm radius of the TEB Airport.

