

DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

CERTIFICATE OF WAIVER OR AUTHORIZATION

ISSUED TO

Department of Homeland Security – Customs and Border Protection

ADDRESS

1355 Customs Drive
March ARB, CA 92518

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 Predator-B UAS in (b) (7)(E) airspace while transiting between (b) (7)(E) (and reverse) under the jurisdiction of (b) (7)(E)

See special provisions.

LIST OF WAIVED REGULATIONS BY SECTION AND TITLE

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 2009-WSA-68 is effective from February 9, 2011 through February 8, 2012, 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-13
(Region)

Ardyth Williams
(Signature)

February 2, 2011
(Date)

Air Traffic Manager, Unmanned Aircraft Systems
(Title)

ATTACHMENT to FAA FORM 7711-1**Issued To:** Department of Homeland Security – Customs and Border Protection**Address:** 1355 Customs Drive
March ARB, CA 92518**Activity:** Operation of the Predator-B UAS in (b) (7)(E) airspace while transiting between (b) (7)(E) (and reverse) under the jurisdiction (b) (7)(E)**Purpose:** To prescribe UAS operating requirements (outside of restricted and/or warning area airspace) in the National Airspace System (NAS) for the purpose of training and/or operational flights.**Dates of Use:** This COA (2009-WSA-68) is valid from February 9, 2011, through February 8, 2012. Should a renewal become necessary, the proponent shall advise the FAA, in writing, no later than 60 days prior to the requested effective date.**General Provisions:**

- The review of this activity is based on our current understanding of UAS operations, and the impact of such operations in the NAS, and therefore should not be considered a precedent for future operations. As changes occur in the UAS industry, or in our understanding of it, there may be changes to the limitations and conditions for similar operations.
- All personnel connected with the UAS operation must comply with the contents of this authorization and its provisions.
- This COA will be reviewed and amended as necessary to conform to changing UAS policy and guidance.

Safety Provisions:

Unmanned Aircraft (UA) have no on-board pilot to perform see-and-avoid responsibilities, and therefore, when operating outside of restricted areas, special provisions must be made to ensure an equivalent level of safety exists for operations had a pilot been on board. In accordance with 14 CFR Part 91, General Operating and Flight Rules, Subpart J-Waivers, 91.903, Policy and Procedures, the following provisions provide acceptable mitigation of 14 CFR Part 91.111/113 and must be complied with:

- For the purpose of see-and-avoid, visual observers must be utilized at all times except in Class A airspace, restricted areas, and warning areas. The observers may either be ground based or in a chase plane. If the chase aircraft is operating more than 100ft above/below and or ½ nm laterally, of the UA, the chase aircraft PIC will advise the controlling ATC facility.
- In order to comply with the see and avoid requirements of Title 14 of the Code of Federal Regulations sections 91.113 and 91.111, the pilot-in-command and visual observers must be able to see the aircraft and the surrounding airspace throughout the entire flight; and be able to determine the aircraft's altitude, flight path and proximity to traffic and other hazards (terrain, weather, structures) sufficiently to exercise effective control of the aircraft to give right-of-way to other aircraft, and to prevent the aircraft from creating a collision hazard.
- UAS pilots will ensure there is a safe operating distance between manned and unmanned aircraft at all times in accordance with 14 CFR Part 91.111, *Operating Near Other Aircraft*, and 14 CFR Part 91.113, *Right-of-Way Rules*. Cloud clearances and VFR visibilities for Class E airspace will be used regardless of class of airspace. Additionally, UAS operations are advised to operate well clear of all known manned aircraft operations.

Airworthiness Certification Provisions:

- UA must be shown to be airworthy to conduct flight operations in the NAS.
- Public Use Aircraft must contain one of the following:
 - A civil airworthiness certification from the FAA, or
 - A statement specifying that the Department of Defense Handbook "Airworthiness Certification Criteria" (MIL-HDBK-516), as amended, was used to certify the aircraft or
 - Equivalent method of certification.

Pilot / Observer Provisions:

- **Pilot Qualifications:** UA pilots interacting with Air Traffic Control (ATC) shall have sufficient expertise to perform that task readily. Pilots must have an understanding of and comply with Federal Aviation Regulations and Military Regulations applicable to the airspace where the UA will operate. Pilots must have in their possession a current (b) (7)(E) airman medical certificate that has been issued under 14 CFR Part 67, Medical Standards and Certification, or a military equivalent. 14 CFR Part 91.17, Alcohol or Drugs, applies to UA pilots.
- Aircraft and Operations Requirements:
 - Flight Below 18,000 Feet Mean Sea Level (MSL).
 - UA operations below 18,000 feet MSL in any airspace generally accessible to aircraft flying in accordance with visual flight rules (VFR) require visual observers, either airborne or ground-based. Use of ATC radar alone does not constitute sufficient collision risk mitigation in airspace where uncooperative airborne operations may be conducted.

- Flights At or Above 18,000 Feet Mean Sea Level (MSL)
 - When operating on an instrument ATC clearance, the UA pilot-in-command must ensure the following:
 1. An ATC clearance has been filed, obtained and followed.
 2. Positional information shall be provide (b) (7)(E)

- **Observer Qualifications:** Observers must have been provided with sufficient training to communicate clearly to the pilot any turning instructions required to stay clear of conflicting traffic. Observers will receive training on rules and responsibilities described in 14 CFR Part 91.111, *Operating Near Other Aircraft*, 14 CFR Part 91.113, *Right-of-Way Rules*, cloud clearance, in-flight visibility, and the pilot controller glossary including standard ATC phraseology and communication. Observers must have in their possession a current (b) (7)(E) airman medical certificate that has been issued under 14 CFR Part 67, Medical Standards and Certification, or a military equivalent. 14 CFR Part 91.17, Alcohol or Drugs, applies to UA observers.

- **Pilot-in-Command (PIC) –**
 - **Visual Flight Rules (VFR) as applicable:**
 - The PIC is the person directly responsible for the operation of the UA. The responsibility and authority of the pilot in command as described by 14 CFR Part 91.3 (or military equivalent), applies to the UAS PIC.
 - The PIC operating a UA in line of sight must pass at a minimum the required knowledge test for a commercial pilot certificate, or military equivalent, as stated in 14 CFR Part 61.125, and must keep their aeronautical knowledge up to date.
 - There is no intent to suggest that there is any requirement for the UAS PIC to be qualified as a crewmember of a manned aircraft.
 - Pilots flying a UA on other than instrument flight plans beyond line of sight of the PIC must possess a minimum of a current commercial pilot certificate, or military equivalent in the category and class, as stated in 14 CFR Part 61.125.
 - **Instrument Flight Rules (IFR) as applicable:**
 - The PIC is the person directly responsible for the operation of the UA. The responsibility and authority of the pilot in command as described by 14 CFR Part 91.3 (or military equivalent), applies to the UAS PIC.
 - The PIC must be a certified pilot (minimum of commercial pilot) of manned aircraft (FAA or military equivalent) in category and class of aircraft flown.
 - The PIC must also have a current/appropriate instrument rating (manned aircraft, FAA or military equivalent) for the category and class of aircraft flown.

- **Pilot Proficiency – VFR/IFR as applicable:**
 - Pilots will not act as a VFR/ IFR PIC unless they have had three qualified proficiency events within the preceding 90 days.

- The term “qualified proficiency event” is a UAS-specific term necessary due to the diversity of UAS types and control systems.
- A qualified proficiency event is an event requiring the pilot to exercise the training and skills unique to the UAS in which proficiency is maintained.
- Pilots will not act as an IFR PIC unless they have had six instrument qualifying events in the preceding six calendar months (an event that requires the PIC to exercise instrument flight skills unique to the UAS).

- **PIC Responsibilities:**
 - Pilots are responsible for a thorough preflight inspection of the UAS. Flight operations will not be undertaken unless the UAS is airworthy. The airworthiness provisions of 14 CFR Part 91.7, Civil Aircraft Airworthiness, or the military equivalent, apply.
 - One PIC must be designated at all times and is responsible for the safety of the UA and persons and property along the UA flight path.
 - The UAS pilot will be held accountable for controlling their aircraft to the same standards as the pilot of a manned aircraft. The provisions of 14 CFR Part 91.13, *Careless and Reckless Operation*, apply to UAS pilots.

- **Pilot/Observer Task Limitations:**
 - Pilots and observers must not perform crew duties for more than one UA at a time.
 - Chase aircraft pilots must not concurrently perform either observer or UA pilot duties along with chase pilot duties.
 - Pilots are not allowed to perform concurrent duties both as pilot and observer.
 - Observers are not allowed to perform concurrent duties both as pilot and observer.

Standard Provisions: These provisions are applicable to all operations unless indicated otherwise in the Special Provisions section.

- The UA PIC will maintain direct two-way communications with ATC and have the ability to maneuver the UA per their instructions. The PIC shall comply with all ATC instructions and/or clearances.
- If equipped, the UA shall operate with an operational mode (b) (7)(E) transponder, (b) (7)(E) or mode (b) (7)(E) transponder (preferred) set to an ATC assigned squawk.
- If equipped, the UA shall operate (b) (7)(E)
- (b) (7)(E)
- (b) (7)(E)
- (b) (7)(E)
- (b) (7)(E)

- Operations outside of restricted areas, warning areas, prohibited areas (designated for aviation use) and/or (b) (7)(E) airspace (b) (7)(E) (b) (7)(E) in the Special Provisions section.
- (b) (7)(E)
- Operations conducted under VFR rules shall operate at appropriate VFR altitudes for direction of flight (14 CFR Part 91.159).
- The UA PIC or chase plane PIC (whichever is applicable) will notify ATC of any in flight emergency or aircraft accident as soon as practical.
- (b) (7)(E)
- (b) (7)(E)
- (b) (7)(E)
- A copy of this COA will be maintained on site by the PIC or designated representative.
- The Department of Homeland Security – Customs and Border Protection and/or its representatives, is responsible at all times for collision avoidance with non-participating aircraft and the safety of persons or property on the surface with respect to the UAS.

Special Provisions:

1. In the event of a lost link, the UAS pilot (b) (7)(E)
(b) (7)(E)
- a. See specific lost link procedures in Attachment 1.
- b. If lost link occurs (b) (7)(E)
(b) (7)(E)
- c. The UA lost link mission (b) (7)(E)
- d. When outside of restricted/warning area airspace, (b) (7)(E)
(b) (7)(E)
- e. (b) (7)(E)
(b) (7)(E)

2. All operations outside of (b) (7)(E) airspace shall be conducted (b) (7)(E)

3. For launch/recovery operations (b) (7)(E) or launch/recovery operation (b) (7)(E)

In all cases appropriate ground and airborne visual observers will be used (b) (7)(E)

4. (b) (7)(E)

5. This transit COA shall not routinely be used. The intent is to transfer aircraft from (b) (7)(E) for the purpose of re-positioning aircraft for (b) (7)(E)

6. CBP Air and Marine Operations Center (AMOC) will radar monitor the UA (b) (7)(E)

7. (b) (7)(E) is not required (b) (7)(E)

8. Transit is authorized (b) (7)(E)

9. Launch and recovery of the UA (b) (7)(E)

10. (b) (7)(E)

11. CBP shall file (b) (7)(E)

12. Contingency Operations

a. Lost Link Points (LLP) (b) (7)(E)

b. A Divert/Contingency Point (DCP) (b) (7)(E) [Redacted]

1) For local operations, (b) (7)(E) [Redacted]

2) For transit and/or mission operations that are being conducted in (b) (7)(E) [Redacted], DCPs may be identified (b) (7)(E) [Redacted]

c. Flight termination is (b) (7)(E) [Redacted]

1) The location of the FTP (b) (7)(E) [Redacted]

2) FTPs must be located (b) (7)(E) [Redacted]

3) The applicant is (b) (7)(E) [redacted]

4) For each FTP, plans must incorporate the means of communication with ATC (b) (7)(E) [redacted]

5) In the event that flight termination is (b) (7)(E) [redacted]

d. In the event of a contingency divert or flight termination, (b) (7)(E) [redacted]

e. In the event of a contingency divert or flight termination, (b) (7)(E) [redacted]

13. The UA pilot-in-command (PIC) must hold, at a minimum, a (b) (7)(E) [redacted] or equivalent.

14. CBP will ensure that Crew Resource Management (CRM) training is completed by all crew members before flying operational or training missions. The course must consist of initial training, as well as CRM recurrent training during every recurrent training cycle, not to exceed a 12 month interval between initial training and recurrent training or between subsequent recurrent training sessions.

NOTAM: A (b) (7)(E) [redacted] Notice to Airman (b) (7)(E) [redacted]

- Name and Address of pilot filing NOTAM request
- Location, Altitude or the operating Area
- Time and nature of the activity

(b) (7)(E) [redacted]

(b) (7)(E)

Incident / Accident and Normal Reporting Provisions: The following information is required to document routine and unusual occurrences associated with UAS activities in the NAS.

- The proponent for the COA shall provide the following information to Donald.E.Grampp@faa.gov on a monthly basis:
 - Number of flights conducted under this COA.
 - Pilot duty time per flight.
 - Unusual equipment malfunctions (hardware/software).
 - Deviations from ATC instructions.
 - Operational/coordination issues.
 - All periods of loss of link (telemetry, command and/or control)
- The following shall be submitted via email, COA On-line or phone (202-385-4542, cell 443-569-1732) to Donald.E.Grampp@faa.gov **within 24 hours and prior to any additional flight under this COA:**
 - All accidents or incidents involving UAS activities, including lost link.
 - Deviations from any provision contained in the COA.

This COA does not, in itself, waive any Federal Aviation Regulation (FAR) 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 the Department of Homeland Security – Customs and Border Protection to resolve the matter. (b) (7)(E)

(b) (7)(E) The Department of Homeland Security – Customs and Border Protection is hereby authorized to operate the Predator B Unmanned Aircraft System UAS in the operations area depicted in “Activity” above and Attachment 2 below.

Attachment 1

EMERGENCY PROCEDURES

Emergency Termination: Unable to sustain flight and return to base

In the event of Flight Termination, the PIC (b) (7)(E)

- (b) (7)(E)
- (b) (7)(E)
- (b) (7)(E)

- (b) (7)(E)

Note: As with manned aircraft operations, the UA may not be able to proceed in a controlled fashion to the flight termination location.

Lost Link: Loss of command uplink, downlink, or both links between the ground control station and the UA

- In the event of a Lost Link condition, the PIC (b) (7)(E)
- (b) (7)(E)
- (b) (7)(E)

- (b) (7)(E)

- (b) (7)(E)

(b) (7)(E)

- (b) (7)(E)

- (b) (7)(E) [Redacted]
- If the lost link condition occurs (b) (7)(E) [Redacted]
 - (b) (7)(E) [Redacted]
 - (b) (7)(E) [Redacted]
- If Lost Link occurs (b) (7)(E) [Redacted]
 - (b) (7)(E) [Redacted]
- Transit from (b) (7)(E) [Redacted]
 - If the lost link condition occurs (b) (7)(E) [Redacted]
 - (b) (7)(E) [Redacted]
 - (b) (7)(E) [Redacted]
 - (b) (7)(E) [Redacted]

- (b) (7)(E) [Redacted]
- (b) (7)(E) [Redacted]
- (b) (7)(E) [Redacted]

- If the lost link condition occurs (b) (7)(E) [Redacted]
(b) (7)(E) [Redacted]
 - (b) (7)(E) [Redacted]
 - (b) (7)(E) [Redacted]

- If Lost Link condition occurs within (b) (7)(E) [Redacted]
(b) (7)(E) [Redacted]

- If Lost link condition occurs within (b) (7)(E) [Redacted]
[Redacted]

- As the UA flies (b) (7)(E) [Redacted] the PIC shall coordinate with ATC
(and AMOC as required) (b) (7)(E) [Redacted]
[Redacted]

Lost Communications: Loss of radio communications between the PIC and ATC

(b) (7)(E) [Redacted]

In the event of Lost Radio Communications between the PIC and ATC, the PIC (b) (7)(E) [Redacted]

- (b) (7)(E) [Redacted]

- (b) (7)(E) [Redacted]

RDR-FHU TRANSIT ROUTE	FTP/LOST LINK	LATITUDE / LONGITUDE	FIX / RADIAL / DISTANCE (FRD)
	(b) (7)(E)	(b) (7)(E)	(b) (7)(E)
	FTP 1		
	FTP 2		
	FTP 3		
	FTP 4		
	FTP 5		
	FTP 6		
	FTP 7		
	FTP 8		
	FTP 9		
	FTP 10		
	FTP 11		
	FTP 12		
	FTP 13		
	(b) (7)(E)		

Attachment 2

APPROVED ROUTE OF FLIGHT

(b) (7)(E) [Redacted]

(b) (7)(E) [Redacted]

(b) (7)(E) [Redacted]

(b) (7)(E)

