

# UAS STANDARD OPERATING PROCEDURES

## PATRIOT TRAINING AREA, CORBIN, KENTUCKY

23 Mar 2009

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- A. INTRODUCTION.** This document covers UAS operations at the Patriot Training Area (PTA), Corbin, Kentucky. This SOP will be used in conjunction with the approved Federal Aviation Administration (FAA) Certificate of Waiver or Authorization (COA) for operations within the PTA at Corbin, KY. COA Airspace coordinates are:
- N 37° 05' 05.99" W 084° 17' 06.20"
  - N 36° 56' 51.86" W 084° 22' 08.31"
  - N 36° 52' 49.61" W 084° 11' 56.39"
  - N 37° 00' 11.29" W 084° 09' 38.36"
  - N 37° 02' 23.02" W 084° 11' 44.84"
- B.** One Pilot in Command (PIC) must be designated at all times and is responsible for the safety of the Unmanned Aircraft (UA) and persons and property along the UA flight path. The PIC may be a Vehicle Operator (VO) or Mission Operator (MO). The PIC will be held accountable for controlling their aircraft to the same standards as the pilot of a manned aircraft. The provisions of 14 CFR 91.13, Careless and Reckless Operation, apply to UAS pilots.
- C.** Unmanned Aircraft System (UAS) operations at the PTA will be conducted over reservoir waters and over land designated with the FAA COA from the surface up to but not including 1500 feet AGL. While over land the UAS will not be operated over heavily traffic roads or over civil watercraft on the lake's surface. Operations will be conducted a maximum of 5 times a week, 8 hours per session. Visual observers will remain in contact with the PIC and will be positioned so that they remain within specified distances both horizontally and vertically of the UAS during all operations. Boats will be used by operators/observers during water operations.
- D. FLIGHT SCHEDULING.** UAS operations within the PTA COA defined airspace will be posted a minimum of 24 hours prior to execution with the Airfield Managers and Fixed Base Operators (FBOs) located at London-Corbin (KLOZ) and Williamsburg-Whitley (W38) airports. At that time a NOTAM will be requested through the Airfield Manager detailing UAS activity within the defined airspace to include mission dates and times.

The schedule notification shall include, at a minimum, the following for each flight:

1. Takeoff time (all times local).
2. Estimated land time.
3. Call sign of UAS pilot/observer.
4. Pilot/Observer names.
5. Pilot/Observer cell phone number as a means of back-up communication.
6. General location within the PTA where operations will be conducted.

# UAS STANDARD OPERATING PROCEDURES

## PATRIOT TRAINING AREA, CORBIN, KENTUCKY

23 Mar 2009

**E. FREQUENCY AUTHORIZATION AND DECONFLICTION.** Contact the Regional Frequency Coordinator to obtain approval for UAS channel.

Area Frequency Coordinator AF Frequency Management Agency Hoffman 1, Suite 1203 2461 Eisenhower Avenue Alexandria, VA 22331-1500 Telephone: (703) 428-1544 DSN: 328-1544	<b>AFFMA</b>	Alabama north of 33°30'N; Connecticut; Kentucky; Maine; Massachusetts; Mississippi less east of 90°W, south of 33°30'N; New Hampshire; New Jersey north of 41°N; Ohio; Rhode Island; Tennessee; Vermont; West Virginia; and those areas of the following states west of the Mid-Atlantic AFC area: Georgia north of 33°30'N; Maryland; North Carolina; Pennsylvania including the north of 41°N; South Carolina; Virginia
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**F. PRE-FLIGHT BRIEFINGS.** Prior to any UAS operations, the PIC will conduct a crew and safety briefing. The briefing will include, at a minimum, the following:

1. Mission overview.
2. Weather. (Current and forecasted)
3. Flight route/area. Ensure the PTA operations area is loaded in Falcon View.
4. Airspace surveillance procedures.
  - a. Pilots responsibilities.
  - b. Observers' responsibilities.
  - c. Pilot/Observer responsibilities when they observe an aircraft in vicinity of UA operations.
5. Required items, mission equipment, and personnel.
6. Crew actions, duties, and responsibilities.
  - a. Modes of flight, who will make radio calls, identification of recovery team, etc.
  - b. Emergency actions.
    - (1) Mission considerations.
    - (2) Actions to be performed by VO/MO.
7. General crew duties.
  - a. Vehicle Operator (VO).
    - (1) Fly the air vehicle.
    - (2) Avoid traffic and obstacles.
    - (3) Cross check display symbology, messages, wind velocity/ direction.
  - b. Mission Operator (MO)
    - (1) Assist in traffic and obstacle avoidance.
    - (2) Manage radios.
    - (3) Navigate.
    - (4) Cross check display symbology, messages, wind velocity/direction.
    - (5) Read and complete checklist items as required.
    - (6) Set/adjust pages/switches and systems as required.
    - (7) Note takeoff time.
    - (8) Log events.

# UAS STANDARD OPERATING PROCEDURES

PATRIOT TRAINING AREA, CORBIN, KENTUCKY

23 Mar 2009

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- (9) Calculate and monitor times for holding and approaches.
- (10) When on approach, watch for the air vehicle.
- (11) Be prepared to direct the VO for a missed approach procedure, if required.
- (12) When visual is acquired direct VO to the ground if needed.
- c. Observer
  - (1) Must remain specified distances both horizontally and vertically of the UAS during all operations. (Boats will be used during off shore operations)
    - a) WASP: 500 feet vertically, one-half mile laterally.
    - b) RAVEN: 1200 feet vertically, one mile laterally.
    - c) PUMA AE: 1500 feet vertically, one mile laterally.
  - (2) Must keep the UAS in sight at all times.
  - (3) Maintain two-way contact with the VO/MO to warn of potential hazards.
  - (4) Provide VO/MO with instructions to steer clear of any potential collisions.
  - (5) Will have cell phone available for backup communication.
- 8. Analysis of the aircraft. Logbook and preflight deficiencies.
- 9. Risk assessment considerations.
- 10. Comments: Instructor, Mission commander, Crew member, Observer questions, comments, and acknowledgment of the mission briefing.

**G. PRE-FLIGHT PROCEDURES.** UAS are particularly sensitive to adverse weather conditions such as moderate to blowing sand and dust, rain, severe turbulence, storms and lightning, and wind gusts. Operators will be responsible to routinely check current and forecasted conditions. It will be the responsibility of the PIC to ensure weather conditions do not exceed system limitations as described in Operator's Manual. All flight operations will be conducted in Visual Meteorological Conditions (VMC) under Visual Flight Rules (VFR). The PIC will complete the Preflight checklist in Operator's Manual.

**H. LAUNCH and FLIGHT.** The VO will complete, at a minimum, the following:

- 1. Follow procedures outlined in Operator's Manual.
- 2. Announce commencement of operations on KLOZ (123.0) and W38 (122.7) CTAF/UNICOM frequencies that operations have begun.
- 3. Remain within the boundaries of the PTA and the COA defined Airspace.



# UAS STANDARD OPERATING PROCEDURES

## PATRIOT TRAINING AREA, CORBIN, KENTUCKY

23 Mar 2009

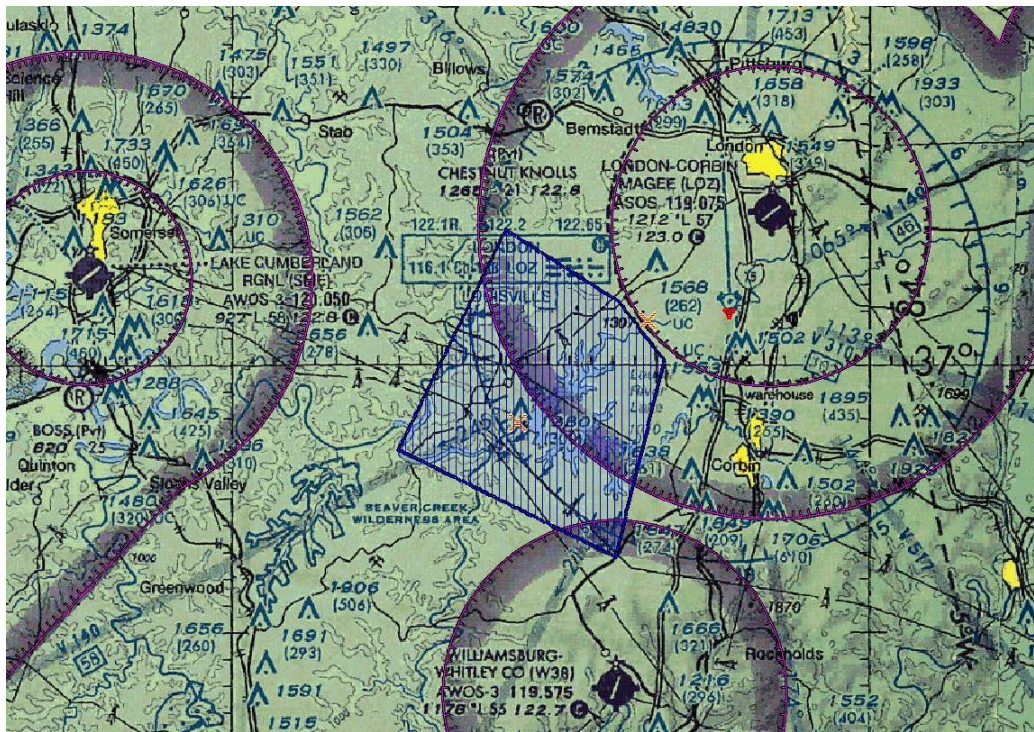


Figure 1: PTA operation area/PTA COA defined Airspace



Figure 2: PTA operation area/PTA COA defined Airspace

# UAS STANDARD OPERATING PROCEDURES

## PATRIOT TRAINING AREA, CORBIN, KENTUCKY

23 Mar 2009

### I. POST FLIGHT PROCEDURES. The PIC will complete, at a minimum, the following:

1. Notify London-Corbin (KLOZ) and Williamsburg-Whitley (W38) FBOs and Airfield Managers upon completion of the day's activities.
2. Inventory and account for all equipment.
3. Report any discrepancies.
4. Conduct a visual and functional equipment inspection.
5. Complete an entry to the flight log.

### J. EMERGENCY PROCEDURES. Preventing a mishap or UA loss or damage depends on early recognition of dangerous flight conditions or malfunctions followed by appropriate corrective action. Both the VO and MO will memorize the immediate action items of each emergency procedure outlined in the UAS Operator's Manual. Mission planning must include alternative courses of action available for each phase of the proposed flight. To the extent possible, planned courses of actions for emergencies should be made before the flight begins to include ensuring the Rally waypoint (in the event of loss-of-link) and waypoint "E" (for routine landings) are within the designated COA airspace. During flight, both operators must maintain situational awareness and VO should always know which direction to fly to escape hazard. MO should always know UA position relative to hazards and be ready to give VO headings and altitudes to fly to safety. Those steps that must be performed immediately in an emergency are underlined and in bold print in the Operator's Manual. The operators must be able to perform these steps without referencing the checklist or manual. Non-underlined steps can be accomplished with use of the checklist. During an emergency, the PIC will complete, at a minimum, the following:

1. Follow procedures outlined in UAS Operator's Manual.
2. Operator or observer will announce execution of lost-link procedures and/or emergency fly-away conditions on KLOZ (123.0) and W38 (122.7) CTAF/UNICOM frequencies.

### K. POINTS OF CONTACT:

Name	Representing	Title	Phone (office)	Phone (cell)	email
(b) (6)	London-Corbin Airport LOZ	Airport Manger	(b) (6)	(b) (6)	(b) (6)
(b) (6)	Williamsburg/Whitley Co. Airport	Airport Manager	(b) (6)	(b) (6)	(b) (6)

### L. MISCELLANEOUS.

1. The United States Special Operations Command and/or its representatives are 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.



# UAS STANDARD OPERATING PROCEDURES

PATRIOT TRAINING AREA, CORBIN, KENTUCKY

23 Mar 2009

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2. Incident / Accident Reporting: The following information is required to document unusual occurrences associated with UAS activities in the National Air Space System.
  - a. The proponent for the COA shall provide the following information to [donald.e.grampp@faa.gov](mailto:donald.e.grampp@faa.gov) on a monthly/annual basis (Note: reporting is not required until the first flight occurs. Then reporting must continue on a monthly/annual basis even when no flights are executed):
    - 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 Communications.
    - All spill outs from approved COA airspace.
  - b. The following shall be submitted to [donald.e.grampp@faa.gov](mailto:donald.e.grampp@faa.gov) within 24 hours:
    - Deviations from the “Special Provisions” contained in the COA.
    - All periods of Loss Link, including duration.
    - All incidents involving the UAS as defined in 49 CFR 830.
    - All accidents involving the UAS as defined in 49 CFR 830.