

## CERTIFICATE OF WAIVER OR AUTHORIZATION

ISSUED TO

Department of the Navy

ADDRESS

Program Executive Officer  
Strike Weapons and Unmanned Aviation  
47123 Buse Road, Building 2272  
Patuxent River, MD 20670-1547

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 Global Hawk, Unmanned Aircraft System (UAS) in A, D and E airspace as specified below and in attachment 1 under the jurisdiction of the Boston Air Route Traffic Center (ARTCC), New York ARTCC, Washington ARTCC, Miami ARTCC, and Jacksonville ARTCC.

- Class A airspace directly to/from Warning Areas (b) (3) at or above FL500.
- Over-water Class A and oceanic airspace delegated to FAA control from FL510 to FL600 with the following boundaries: (b) (3)  
Any flights outside of the eastern boundary will require prior approval by the affected FAA facility(s).
- Overland Class A airspace across (b) (3)
- Over-water Class A and oceanic airspace delegated to FAA control from (b) (3)  
. Any flights outside FAA control (south) will require prior approval by the affected FAA facility(s).
- Class A, D, and E airspace associated with hurricane evacuation routing to (b) (3)
- 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 2008-ESA-33 is effective from July 24, 2009 through July 23, 2010, 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, AJR-36  
(Region)

Ardyth Williams  
(Signature)

July 24, 2009  
(Date)

Air Traffic Manager, Unmanned Aircraft Systems  
(Title)

**ATTACHMENT to FAA FORM 7711-1**

**Issued To:** Department of the Navy

**Address:** Program Executive Officer  
Strike Weapons and Unmanned Aviation  
47123 Buse Road, Building 2272  
Patuxent River, MD 20670-1547  
ATTN: (b) (6)

**Activity:** Operation of the Global Hawk, Unmanned Aircraft System (UAS) in A, D and E airspace as specified below and in attachment 1 under the jurisdiction of the Boston Air Route Traffic Center (ARTCC), New York ARTCC, Washington ARTCC, Miami ARTCC, and Jacksonville ARTCC.

- Class A airspace directly to/from Warning Areas (b) (3) at or above FL500.
- Over-water Class A and oceanic airspace delegated to FAA control from FL510 to FL600 with the following boundaries: the U.S. coastline (west) to the outer Contiguous U.S. ADIZ (east), to the Canadian ADIZ (north), to W-465, inclusive, (south). Any flights outside of the eastern boundary will require prior approval by the affected FAA facility(s).
- Overland Class A airspace across the (b) (3)
- Over-water Class A and oceanic airspace delegated to FAA control from (b) (3) . Any flights outside FAA control (south) will require prior approval by the affected FAA facility(s).
- Class A, D, and E airspace associated with hurricane evacuation routing to (b) (3) (b) (3)
- Flight profiles in other areas will require additional COAs.

**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 Certificate of Authorization (COA) 2008-ESA-33 is valid from July 24, 2009 through July 23, 2010. Should a renewal become necessary, the proponent shall advise the Federal Aviation Administration (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 91.113 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. The UA must remain within a lateral distance of no more than 2.5 Nautical Miles (NM) and 3,000 feet vertically from the visual observer. 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.
- 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.
- The dropping or spraying of aircraft stores, or carrying of hazardous materials (included ordnance) outside of active Restricted, Prohibited, or Warning Areas is prohibited unless specifically authorized in the Special Provisions of this COA.

### **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 second class (or higher) 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 provided in reference to established NAS fixes, NAVAIDS, and waypoints. Use of Latitude/Longitude is not authorized.
- **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 second class (or higher) 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 private pilot certificate, or military equivalent, as stated in 14 CFR Part 61.105, 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 private pilot certificate, or military equivalent in the category and class, as stated in 14 CFR 61.105.
- **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 Part CFR Part 91.3 (or military equivalent), applies to the UAS PIC.
  - The PIC must be a certified pilot (minimum of private 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, unless specified otherwise in the Special Provisions section. The PIC shall comply with all ATC instructions and/or clearances.
- If equipped, the UA shall operate with an operational mode 3/A transponder, with altitude encoding, or mode S transponder (preferred) set to an ATC assigned squawk.
- If equipped, the UA shall operate with position/navigation lights on at all times during flight.
- The UA PIC shall not accept any ATC clearance requiring the use of visual separation or sequencing.
- VFR cloud clearances and visibilities for Class E airspace will be used regardless of class of airspace the UAS is operating in, except when operating in Class A airspace where 14 CFR Part 91.155 will apply.
- Special VFR is not authorized.
- Operations (including lost link procedures) shall not be conducted over populated areas, heavily trafficked roads, or an open-air assembly of people.
- Operations outside of restricted areas, warning areas, prohibited areas (designated for aviation use) and/or Class A airspace may only be conducted during daylight hours, unless authorized in the Special Provisions section.
- Operations shall not loiter on Victor airways, Jet Routes, Q Routes, IR Routes, or VR Routes. When necessary, transit of airways and routes shall be conducted as expeditiously as possible.
- 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.
- All operators that use GPS as a sole source, must check all NOTAM's and Receiver Autonomous Integrity Monitoring (RAIM). Flight into GPS test area or degraded RAIM is prohibited without specific approval in the special provisions.
- At no time will TCAS be used in any mode while operating an unmanned aircraft.
- Only one UA will be flown in the operating area unless indicated otherwise in the Special Provisions.
- The Department of the Navy 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. A NOTAM shall be published through (b) (3) Air Operations no more than 72 hours nor less than 6 hours prior to flight describing the location, times, and altitudes associated with the departure and arrival phases of each Global Hawk flight.

2. A signed Letter of Agreement (LOA) between (b) (3)

and affected air traffic control facilities must be attached prior to operations approved under this COA. The LOA may be more restrictive based on ATC requirements, but cannot be less restrictive than the contents of this Certificate.

3. All operations shall be conducted in accordance with the provisions contained in signed Letter(s) of Agreement (LOA). The LOA(s) must include specific responsibilities and/or procedures to ensure a smooth operation. Examples include, but are not limited to, the following:

- Flight planning, airspace scheduling and activation, and pre-launch notification procedures.
- The coordination process/procedures between the proponent and (1) the appropriate ARTCC military operations specialists (or designated representative), (2) U.S. Navy Fleet Area Control & Surveillance Facilities, and (3) Using Agencies of Special Use Airspace and Air Traffic Control Assigned Airspace (ATCAAs).
- Departure and arrival routes and other procedures to gain access to the over-water operating areas. The approved routes are at Attachment 1.
- All known flight profile descriptions, including hurricane evacuation, with accompanying route of flight charts. The charts depicting the (b) (3) are at Attachments 2, 3, and 4, respectively.
- The “local flying area” includes the (b) (3) restricted areas, the departure and arrival routes (Atch 1), and (b) (3)
- Any special provisions based on Air Traffic control requirements, as required.

4. Air Traffic Control Assigned Airspace (ATCAAs) will be established and defined in the LOA and will be in accordance with, and a subset to, the airspace described in the paragraph “Activity” above. The ATCAAs are depicted in Attachment 5. The ATCAAs will be in (b) (3) and ZBW airspace. GH missions in ZJX, ZMA, and ZHU airspace will use flight plan routing. The communications plan for the ATCAAs will also be delineated in the LOA.

- The ATCAAs will be used for GH missions using the “Northern Route.”
- Flights on the “Southern Route” will use a combination of ATCAA airspace and flight-planned routing. Flight plan routing will be used once the GH reaches ZJX airspace. The ATCAAs end on the demarcation line between ZDC and ZJX.
- The (b) (3) The GH will have the option to fly overland across (b) (3) . (b) (3) will be used as a ditching point in case of a catastrophic failure. Additionally, the GH will have the option of flying over water, around (b) (3)

5. The proponent shall ensure all flight operations, excluding departure and arrival maneuvers, are conducted at or above FL510, unless previously coordinated. Under normal conditions, the Global Hawk will use (b) (3) to reach FL500 before

transitioning to the warning areas. However, if weather conditions dictate (i.e., high-wind conditions at altitude), Washington ARTCC may, traffic permitting, approve transitions at lower altitudes, but no lower than FL300. This also applies to transitions from the warning areas to (b) (3)

6. The USN 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.

7. UAS Emergencies/contingency modes:

- Global Hawk has three primary contingency modes: C-1 Lost data link/communications, C-2 Return to base, and C-3 Emergency landing.
- During C-1 contingency squawk 7600, or a C-2 return to base contingency (squawking normal) Global Hawk will return to (b) (3) . The ATC facility having communications and control with Global Hawk will initiate the proper coordination immediately upon receiving notification of any C-1/2 category system malfunction.
- If a C-3 contingency mode exists, Global Hawk will squawk (b) (3) and make an emergency landing.
  - (b) (3) (see Attachment 1). If Global Hawk is operating west of the (b) (3) the aircraft will return to (b) (3) for landing. If Global Hawk is over or east of the (b) (3) , Global Hawk shall proceed to (b) (3) for landing.
  - (b) (3) . If Global Hawk is operating at or west of the (b) (3) NM fix (see Attachment 1), the aircraft will return to (b) (3) for landing maintaining FL 500 to the maximum extent possible, going no lower than FL 410 before GHAWK. If Global Hawk is east of (b) (3) , Global Hawk shall proceed to WAL for landing.
  - Any other potential divert bases must be evaluated and approved by HQ FAA and must be attached to this Certificate.

8. In the event of a lost link, the UAS pilot will immediately notify the appropriate air traffic facility based on the UA location, state pilot intentions, and comply with the following provisions:

- Lost link procedures will be as contained in the Letter of Agreement
- If lost link occurs within a restricted or warning area, or the lost link procedure above takes the UA into the restricted or warning area – the aircraft will not exit the restricted or warning areas until the link is re-established.
- The UA lost link mission will not transit or orbit over populated areas.
- When outside of restricted/warning area airspace, lost link programmed procedures will avoid unexpected turn-around and/or altitude changes and will provide sufficient time to communicate and coordinate with ATC.
- Lost link orbit points shall not coincide with the centerline of Victor airways.

**NOTAM:** A distance (D) Notice to Airman shall be issued when UA operations are being conducted. This requirement may be accomplished through your local base operations or NOTAM issuing authority. You may also complete this requirement by contacting 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 and provide:

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

**NOTE FOR PROPONENTS FILING THEIR NOTAM WITH DoD ONLY:** This requirement to file with the AFSS is in addition to any local procedures/requirements for filing through DINS. The FAA Unmanned Aircraft Systems Office is working with the AFSS, and to eliminate the requirement to file a NOTAM with both the AFSS and DINS in the near future.

**Incident / Accident Reporting Provisions:** The following information is required to document 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](mailto: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 or phone (202-385-4542, (b) (6) [REDACTED] to [Donald.E.Grampp@faa.gov](mailto:Donald.E.Grampp@faa.gov) **within 24 hours:**
  - 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 the Navy to resolve the matter. **This COA does not authorize flight within Special Use Airspace without approval from the Using Agency.** The Department of the Navy is hereby authorized to operate the Global Hawk Unmanned Aircraft System UAS in the operations area depicted in “Activity” above and attachment 1 below.

Attachment 1: (b) (3)  
Attachment 2: (b) (3)  
Attachment 3: (b) (3)  
Attachment 4: (b) (3)  
Attachment 5: (b) (3)  
Attachment 6: (b) (3)

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Washington ARTCC; Miami ARTCC; Jacksonville ARTCC; New York ARTCC; Boston  
ARTCC, Houston ARTCC, (b) (3) Radar Approach  
Control; (b) (3)

## LETTER OF AGREEMENT

EFFECTIVE: March 31, 2009

SUBJECT: AIR TRAFFIC CONTROL SERVICES FOR GLOBAL HAWK OPERATIONS

**1. PURPOSE:** This agreement establishes responsibilities and procedures to provide air traffic control services for Global Hawk Unmanned Aircraft System (UAS) operating in accordance with a HQ FAA-approved FAA Form 7711-1, "Certificate of Authorization" (COA). The COA describes, in detail, the area of operations that the Global Hawk will be permitted to fly in the National Airspace System (NAS). This Letter of Agreement (LOA) may be more restrictive based on air traffic control requirements and cannot supersede the provisions of the Certificate of Authorization (COA).

**2. CANCELLATION:** This agreement cancels and supersedes the specified responsibilities and procedures contained in the (b) (3) ; Global Hawk Control;(b) (3)

Letter of Agreement dated 2 May 2005,  
Subject: Air Traffic Control Services for Global Hawk Operations.

**3. SCOPE:** Applicable to (b) (3) Radar Approach  
Control (b) (3)

Washington Air Route Traffic Control Center (ZDC), Miami Air Route Traffic Control Center (ZMA), Jacksonville Air Route Traffic Control Center (ZJX), New York Air Route Traffic Control Center (ZNY), Boston Air Route Traffic Control Center (ZBW), Houston Air Route Traffic Control Center (ZHU). References to all six Air Route Traffic Control Centers (CENTERS).

**4. MARSA:** Military Assumes Responsibility for Separation of Aircraft. MARSA is applicable to participating aircraft entering into or established in the ATCAA(s)/COA-defined airspace.

**5. RESPONSIBILITIES:** The signatories, or their designated representatives, must review this agreement annually and, should circumstances warrant, amend the provisions of this agreement, as required. Additionally, the signatories of this document retain the authority to withdraw the provisions of this agreement at anytime and for any reason it deems appropriate, upon a 30-day written notice to all other signatories.

(b) (3)  
(b) (3)

/(b) (3)

Effective: March 31, 2009

**6. PROCEDURES:**

a. (b) (3) must:

(1) Schedule appropriate airspace and coordinate activation of the ATCAA(s) and routing as appropriate within 3 working days prior for routine operations and no later than 30 days prior for a large scale exercise with the FAA Military Operations Specialist, Duty Officer, or EADS as listed in Attachment 1.

(2) File all flight plans associated with Global Hawk with (b) (3) base operations facility a minimum of 2 hours prior to estimated time of departure from (b) (3)

(a) For Global Hawk operations remaining within the ATCAAs, file separate flight plans to and from the ATCAAs.

(b) For GH Operations extending beyond the Southern ATCAA, flight plans must include a Southern ATCAA IP/EP as defined below.  
(See Attachment 6)

(b) (3)

(3) The Global Hawk will depart or arrive at (b) (3) by one of two scenarios, the (b) (3)

(4) Notify (b) (3) a minimum of ninety (90) minutes prior to scheduled launch and recovery of the Global Hawk.

(5) The Pilot in Command (PIC) must initiate and maintain radio contact, provide the beacon code and a position report with the appropriate facility while in the ATCAAs as depicted in Attachment 5, unless instructed otherwise by ATC.

b. (b) (3) must:

(1) Notify ZDC, (b) (3) a minimum of thirty (30) minutes prior to all known Global Hawk operations.

(2) Activate applicable Restricted Areas, through ZDC Military Operations Specialist (MOS), on the GP24060 line (dial 66) or by commercial telephone line 703-771-3473.

(3) Point out all Global Hawk flights to ZDC prior to exiting restricted area R-4008 via point (b) (3) at or above, FL500.

(4) Handoff (outbound) Global Hawk aircraft to (b) (3) no later than (b) (3)

(b) (3)  
(b) (3)

(b) (3)

Effective: March 31, 2009

(5) If weather conditions dictate and with prior coordination with ZDC, the Global Hawk may depart or enter (b) (3) below FL500, at an altitude not below FL300 via the (b) (3)

(6) Monitor all Global Hawk arrival and departure maneuvers to ensure they remain within the confines of (b) (3) airspace.

(7) Be manned to support launch and recovery of all Global Hawk operations.

c. (b) (3) must:

(1) Monitor all Global Hawk maneuvers to ensure they remain within the ATCAA area of operations and the departure/arrival routes under (b) (3) responsibility.

(2) Advise any affected ATC facilities and airfields in the event of any deviations/diversions of Global Hawk from the ATCAA/COA-defined area of operations.

(3) Activate Global Hawk Flight Plan for exit of the Southern ATCAA and initiate handoff to (b) (3) via the egress points (EPs) on Attachment 6 prior to exiting the Southern ATCAA.

(4) Handoff recovering Global Hawk aircraft to (b) (3) no later than (b) (3)

(5) If weather conditions dictate and with prior coordination with (b) (3), the Global Hawk may depart the ATCAA below FL500, at an altitude not below FL300 via (b) (3)

d. CENTERS must:

(1) Activate the ATCAA on the scheduled times unless otherwise coordinated with (b) (3)

(2) Monitor all Global Hawk maneuvers to assist them in remaining within the confines of their defined areas of operation. ZBW, ZDC and ZNY will monitor their assigned ATCAAs. ZHU, ZJX and ZMA will monitor the COA-defined area of operation within their respective ARTCC boundaries.

(3) Advise all affected ATC facilities and airfields in the event of any deviations/diversions of Global Hawk from the ATCAA/COA-defined area of operations.

## 7. AREA OF OPERATIONS:

- a. The local flying area is defined as airspace in the (b) (3) Restricted Areas, the departure and arrival routes described in Attachments 2 and 3, (b) (3) (b) (3)
- b. Operations on the Northern Route will be conducted in ATCAA/COA-defined airspace in accordance with the procedures outlined in paragraph 6. ATCAA/COA airspace is depicted in Attachment 4A-C. ZNY, ZBW, or (b) (3) will monitor the Global Hawk, as appropriate. (See Note 1)
- c. Operations along the (b) (3) will be conducted in accordance with the flight plan. Global Hawk will be under the control of (b) (3) (b) (3), as appropriate. (See Note 2)

**NOTE 1:** (b) (3) will monitor the Global Hawk while within Global Hawk South ATCAA. The graphic in Attachment 5 provides the appropriate (b) (3) frequency that the Global Hawk must monitor and is dependent upon the location of the aircraft. Should a situation necessitate a frequency transfer to another ATC facility, (b) (3), (b) (3) will initiate a handoff to the appropriate Facility Sector. (b) (3) will monitor the Global Hawk while within the Global Hawk North ATCAA. (b) (3) will monitor the Global Hawk while within the Global Hawk East ATCAA and Global Hawk Southeast ATCAA. The appropriate frequencies are depicted in Attachment 5.

**NOTE 2:** The various waypoints depicted in the Southern routes are considered transitory points for the Global Hawk flight. Once reaching the exercise airspace, the Global Hawk will delay in that particular area and, upon mission completion, will resume its course by flying to a designated transitory waypoint. Upon reaching the waypoint, the Global Hawk will resume the depicted course on the return-to-base profile to (b) (3)

## 8. HURRICANE EVACUATION (HUREVAC):

- a. Global Hawk will depart (b) (3) using one of the departure routes stated in paragraph 6.a.(3), establish itself in the ATCAAs and proceed to the egress point for (b) (3) as depicted in Attachment 7. Once Global Hawk reaches the egress point, it will delay until (b) (3) can issue clearance to descend into (b) (3) Global Hawk must delay if necessary within W-102 to allow (b) (3) and (b) (3) the time to clear non-participating aircraft from the affected area and allow the chase aircraft to escort Global Hawk to (b) (3) Once clearance is obtained from ZBW to depart (b) (3), the Global Hawk will proceed via the routing depicted in Attachment 7 to (b) (3) (b) (3)

b. Global Hawk must return to (b) (3) using the following procedures. Departure from (b) (3) must be in accordance with the routing depicted in Attachment 8 and procedures for the ATCAAs. (b) (3) will coordinate with (b) (3) to activate the ATCAAs prior to departure. Once established in (b) (3), the Global Hawk will be issued clearance to climb into the ATCAA and return to (b) (3) using the ATCAA(s) as depicted in Attachment 4A-C. Arrival into (b) (3) will be in accordance with paragraph 6.a.(3)

c. (b) (3) and (b) (3) shall ensure the use of a chase aircraft outside of Class A airspace for landing and departure procedures to (b) (3), per the COA.

d. (b) (3) will cease Air Operations effective January 29, 2010 at 2200(L), which will terminate participation in this Letter of Agreement.

**9. CONTINGENCY MODES/EMERGENCY:**

a. (b) (3) must notify the appropriate controlling agency in the event of any emergency with the Global Hawk UAS.

(b) (3)

(b) (3)

**10. ATTACHMENTS:**

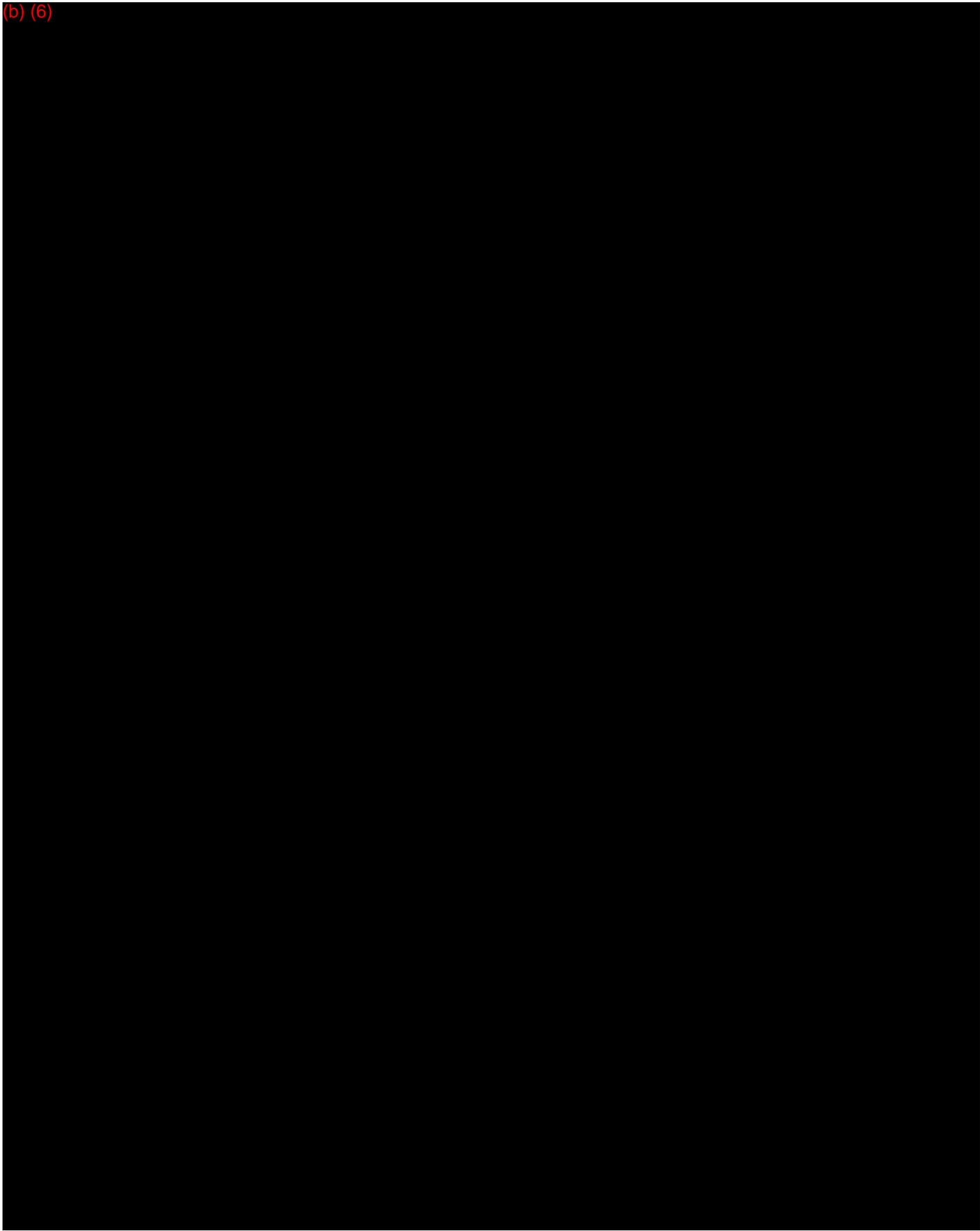
- Attachment 1: (b) (3)
- Attachment 2: (b) (3)
- Attachment 3: (b) (3)
- Attachment 4A: (b) (3)
- Attachment 4B: (b) (3)
- Attachment 4C: (b) (3)
- Attachment 5: (b) (3)
- Attachment 6: (b) (3)
- Attachment 7: (b) (3)
- Attachment 8: (b) (3)

(b) (3)  
(b) (3)

(b) (3)

Effective: March 31, 2009

(b) (6)



ZDC/ZBW/ZHU/ZJX/ZMA/ZNY(b) (3)  
(b) (3)

Effective: March 31, 2009

## Scheduling Points of Contact

(b)(3),(b)(6)

(b) (3)

(b) (3)

(b) (3)

(b) (3)

(b) (3)

(b) (3)

(b) (3)  
(b) (3)

(b) (3)

Effective: March 31, 2009

(b) (3)

(b) (3)

(b) (3)

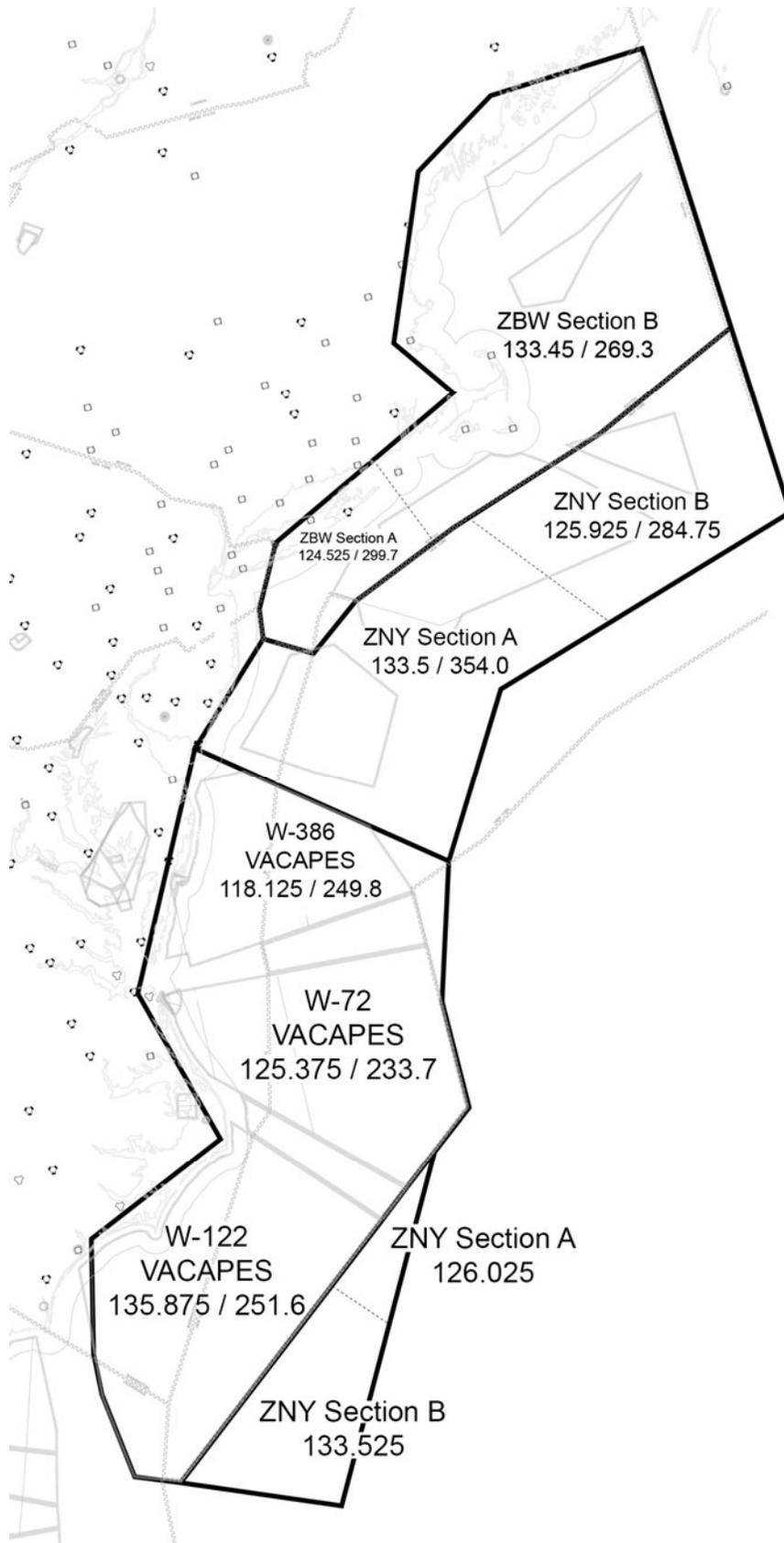
(b) (3)

(b) (3)

(b) (3)  
(b) (3)

Effective: March 31, 2009

**(b) (3) Frequencies to Monitor**



(b) (3)  
(b) (3)

(b) (3)

Effective: March 31, 2009

(b) (3)

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Effective: March 31, 2009

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Effective: March 31, 2009