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

generally CBP operations will be conducted in an (b) (7)(E) operational area.

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-92 is effective from December 1, 2010 through November 30, 2011, 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)

November 29, 2010
(Date)

Air Traffic Manager, Unmanned Aircraft Systems
(Title)

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ATTACHMENT to FAA FORM 7711-1

Issued To: Department of Homeland Security – Customs and Border Protection (CBP)

Address: 1355 Customs Drive
March ARB, CA 92518

Activity: Operation of the Predator-B UAS (b) (7)(E) under the
jurisdiction of (b) (7)(E)
BP operations will be conducted in an airspace (b) (7)(E)
(b) (7)(E) specifically defined in Attachment #1.

Purpose: To prescribe UAS operating requirements (b) (7)(E)
(b) (7)(E) in the National Airspace System (NAS) for the purpose of
operational flights.

Dates of Use: This COA (2009-WSA-92) is valid from December 1, 2010, through
November 30, 2011. 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, 14 CFR 91.903, Policy and Procedures, the following provisions provide acceptable mitigation of 14 CFR 91.113 and must be complied with:

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- For the purpose of see-and-avoid, visual observers must be utilized at all times except in Class A and (b) (7)(E) restricted areas, 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 NM and 3,000 feet vertically from the visual observer. If the chase aircraft is operating more than 100 ft above/below and or ½ nm laterally of the UA, the chase aircraft PIC will advise the controlling ATC facility. The distances listed are the maximum, at no time will the UA be operated at a distance beyond the visual line of sight for the visual observer.
- UAS pilots will ensure there is a safe operating distance between manned and unmanned aircraft at all times in accordance with 14 CFR 91.111, *Operating Near Other Aircraft*, and 14 CFR Part 91.113, *Right-of-Way Rules*. 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 (b) (7)(E) airman medical certificate that has been issued under 14 CFR 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 a Special Security Instruction (SSI) TFR (TFR minimum requirements of squawk and talk) or visual observers, either airborne or ground-based. When a TFR is used for see and avoid, it will remain active for the duration of the mission.

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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)

[REDACTED]

- **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.

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- 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 shall 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, with (b) (7)(E) or mode (b) (7)(E) transponder (preferred) set to an ATC assigned squawk.

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- If equipped, the UA shall operate with (b) (7)(E) [REDACTED]
- (b) (7)(E) [REDACTED]
- (b) (7)(E) [REDACTED]
- (b) (7)(E) [REDACTED]
- (b) (7)(E) [REDACTED]
- (b) (7)(E) [REDACTED]
- Operations outside of restricted areas, warning areas, prohibited areas (designated for aviation use) and/or (b) (7)(E) airspace (b) (7)(E) [REDACTED] in the Special Provisions section.
- (b) (7)(E) [REDACTED]
- 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) [REDACTED]
- (b) (7)(E) [REDACTED]
- (b) (7)(E) [REDACTED]
- 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. All CBP flight operations shall be conducted with (b) (7)(E) [REDACTED]
2. In the event of a lost link, CBP (b) (7)(E) [REDACTED] (b) (7)(E) [REDACTED] The UAS operator will immediately notify Air Traffic Control (ATC) and coordinate the lost link profile (b) (7)(E) [REDACTED]

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- a. If lost link occurs (b) (7)(E)
[REDACTED]
 - b. If lost link occur (b) (7)(E)
[REDACTED]
 - c. See specific lost link procedures in Attachment #3.
 - d. (b) (7)(E)
[REDACTED]
 - e. (b) (7)(E)
[REDACTED]
 - f. If lost link occur (b) (7)(E)
[REDACTED]
 - g. (b) (7)(E)
[REDACTED]
 - h. (b) (7)(E)
[REDACTED]
3. All operations outside of Warning areas, Restricted (b) (7)(E)
[REDACTED]
4. Landline Numbers in the event of Lost Link/Emergency/Lost Comm:
- a. (b) (7)(E)
[REDACTED]
 - b. (b) (7)(E)
[REDACTED]
 - c. (b) (7)(E)
[REDACTED]
 - d. (b) (7)(E)
[REDACTED]
 - e. (b) (7)(E)
[REDACTED]

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- f. (b) (7)(E)
 - g. (b) (7)(E)
 - h. (b) (7)(E)
 - i. (b) (7)(E)
5. The CBP Predator B UAS Area of Responsibility (AOR) is defined in Attachment #1. This operational are (b) (7)(E)
6. Restricted/ Warning Areas (b) (7)(E)
- a. Mission planning, filing into or flying into (b) (7)(E)
 - b. (b) (7)(E)
 - c. (b) (7)(E)
7. CBP operations shall be conducted under:
- a. (b) (7)(E)
 - b. (b) (7)(E) within the boundaries of the UAS operational area defined in Attachment #1.
(b) (7)(E)
8. Visual observers must be positioned within 2.5 nautical miles laterally and 3000 feet vertically to exercise see-and-avoid responsibilities required by 14 CFR Part 91.113, *Right-of-Way Rules: except Water Operations*.

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9. Departure Procedures.

- a. Departure procedures will be accordance with paragraph 6 of the (b) (7)(E) between CBP and KRDR AFB (Attachment #4).

b. (b) (7)(E)

10. Recovery Procedures. UA recovery must be in accordance with paragraph 7 of the LOA between CBP and KRDR AFB (Attachment #4)

11. All climb and descent transitions to/from (b) (7)(E)

12. Launch and recovery of the U (b) (7)(E)

13. ATC clearances into the UAS AOR as defined in Attachment #1 (b) (7)(E)

14. Communications Requirements. Any visual observer, radar monitor, or sensor operator charged with providing collision avoidance for the UA must have direct communication with the UA pilot.

15. Lost Communications. CBP must comply with procedures defined in Attachment #3 that will be utilized in the event of lost communications between the UAS pilot and ATC.

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16. Transponder Failure. If the UAS transponder fails, the PIC (b) (7)(E)

17. ATC Radar Outage. If the PIC is notified that there is a radar outag (b) (7)(E)

18. Emergency Procedures. CBP must comply with emergency procedures contained in Attachment #3.

19. Radar/Sensor Observer. The radar/sensor operator must be thoroughly familiar with and possess operational experience with the equipment being utilized for observation and detection of other aircraft for collision avoidance purposes. The CBP shall utilize the Air Marine Operations Center (AMOC) (b) (7)(E)

(b) (7)(E)

This coordination between the AMOC and PIC will be accomplished (b) (7)(E)

20. Flight Planning Requirements: CBP shall file (b) (7)(E)

21. Coordination. CBP must conduct coordination:

(b) (7)(E)

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e. Coordination for flights (b) (7)(E)

[REDACTED]

22. UAS (b) (7)(E)

[REDACTED]

a. (b) (7)(E)

[REDACTED]

b. (b) (7)(E)

[REDACTED]

c. The appropriate number of ground observers shall be in place and have communications with the appropriate controlling agency and Ground Control Station in order to meet the 2.5mile/3000 ft. visual requirement.

d. (b) (7)(E)

[REDACTED]

e. For operations that will depart or arrive (b) (7)(E)

[REDACTED]

f. All ground observers shall undergo additional training (b) (7)(E)

[REDACTED]

g. (b) (7)(E)

[REDACTED]

h. (b) (7)(E)

[REDACTED]

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(b) (7)(E)

- i. In the event of an emergency (b) (7)(E)

23. (b) (7)(E)

24. Contingency Operations.

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

- b. A Divert/Contingency Point (DCP) is (b) (7)(E)

- 1) For local operations, the DCP specifies (b) (7)(E)

- 2) For transit and/or mission operations that are being conducted in (b) (7)(E) DCPs may be identified along the route of flight, (b) (7)(E)

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(b) (7)(E)

c. Flight termination is (b) (7)(E)

1) The location of the FT (b) (7)(E)

2) (b) (7)(E)

3) (b) (7)(E)

4) For each FTP (b) (7)(E)

d. In the event of a contingency divert or flight (b) (7)(E)

e. In the event of a contingency divert or flight terminatio (b) (7)(E)

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(b) (7)(E)

25. 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.

26. The UA PIC shall hold, at a minimum (b) (7)(E) certificate or equivalent.

27. (b) (7)(E) provided specialized CBP training for PICs has been administered.

28. Department of Homeland Security-CBP accepts all liability for operations that occur outside of FAA flight information regions (FIR) and is responsible for coordination with appropriate air navigation service providers. This does not imply that the FAA is aware or authorizes any specific proposed operations that will occur outside FAA FIRs.

NOTAM: A (b) (7)(E) Notice to Airman (b) (7)(E)

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

(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.

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- 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)

he 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 1 below.

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(b) (7)(E)



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(b) (7)(E)



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(b) (7)(E)



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(b) (7)(E)



(b) (7)(E)

[illegible]

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[illegible]

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(b) (7)(E)



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Attachment #3

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

Operations within the (b) (7)(E)

WARNING: This correspondence may contain Sensitive Security Information and attachments that are controlled under 49 CFR 15 and 1520. No part of this correspondence may be disclosed to persons without a "need to know", as defined in CFR parts 15 and 1520, except with the written permission of the Administrator of the Transportation Security Administration or the Secretary of Transportation. Unauthorized release may result in civil penalty or other action. For U.S. government agencies, public disclosure is governed by 5 U.S.C 552 and 49 CFR parts 15 and 1520.

(b) (7)(E)



(b) (7)(E)



(b) (7)(E)



(b) (7)(E)



(b) (7)(E)



Operations withi (b) (7)(E)



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(b) (7)(E)

(b) (7)(E)

Operations within (b) (7)(E)

(b) (7)(E) the PIC shall coordinate with
ATC (and AMOC as required) (b) (7)(E)

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

(b) (7)(E)

In the event of Lost Radio Communications between the PIC and ATC, the PIC

(b) (7)(E)

- (b) (7)(E)

- (b) (7)(E)

(b) (7)(E)

SEGMENT

FTP

LOST LINK

LATITUDE / LONGITUDE

FTP 1
FTP 2
FTP 3

(b) (7)(E)

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FTP 4

FTP 5

(b) (7)(E)

WAYPOINT 1

(b) (7)(E)

(b) (7)(E)

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(b) (7)(E)	SEGMENT	FTP	LOST LINK
		FTP 6	
		FTP 7	
		FTP 8	
		FTP 9	
		FTP 10	
		FTP 11	
(b) (7)(E)			WAYPOINT 1
			(b) (7)(E)
			WAYPOINT 3
			(b) (7)(E)

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(b) (7)(E)			
SEGMENT	FTP	LOST LINK	LATITUDE / LONGITUDE
(b) (7)(E)	FTP 12		(b) (7)(E)
	FTP 13		
(b) (7)(E)		WAYPOINT 1	(b) (7)(E)
		(b) (7)(E)	
(b) (7)(E)		WAYPOINT 3	(b) (7)(E)
		(b) (7)(E)	
(b) (7)(E)			(LL Point for S3S)
			(b) (7)(E)
(b) (7)(E)			

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CBP/USAF GRAND FORKS AFB Letter of Agreement



**GRAND FORKS AIR FORCE BASE, GRAND FORKS, NORTH DAKOTA and
DEPARTMENT OF HOMELAND SECURITY (DHS), U.S. CUSTOMS AND BORDER
PROTECTION (CBP) UNMANNED AIRCRAFT SYSTEMS (UAS), NORTH DAKOTA
UAS OPERATIONS
LETTER OF AGREEMENT (LOA)**

Effective Date: 15 December 2008

SUBJECT: CBP UAS USE OF GRAND FORKS AIR FORCE BASE

This Letter of Agreement (LOA) establishes a mutual understanding and cooperation for an operating capability for CBP Air and Marine, Predator "B" UASs operating from Grand Forks Air Force Base (GFAFB - KRDR) in support of the DHS/CBP border enforcement mission (b) (7)(E)

(b) (7)(E) Area of Responsibility (AOR). For the purposes of this LOA, GFAFB is defined as GFAFB (b) (7)(E)
(b) (7)(E)

Reference authorities include, but are not limited to:

- a) Grand Forks AFB Instruction 13-101, Airfield and Air Traffic Operations.
- b) CBP UAS Supplement to the CBP Aviation Operations Handbook (AOH).
- c) FAA Certificate of Waiver or Authorization (COA), signed **2 December 2008**, issued to Dept of Homeland Security, U.S. Customs and Border Protection, for (b) (7)(E) Operations.
- d) FAA UAPO Guidance Document 08-01, Unmanned Aircraft Systems Operations in the U.S. National Airspace System, Interim Operational Approval Guidance, dated 13 March, 2008.
- e) FAA Order 7610.4 Special Operations, Chapter 12, Section 9, UAS Operations in the NAS, dated 18 January, 2007. (Change 2, 14 Feb 2008)
- f) CBP A&M NDUASOC Mishap Plan (Interim), dated 11 July 2008
- g) 319 ARW Aircraft Mishap Response Plan
- h) Grand Forks AFB Instruction 24-101, Flight line Driving Program

1. IDENTIFICATION OF AGENCIES FOR PURPOSES OF THIS DOCUMENT

- a) Office of primary responsibility for Air Traffic Operations and Airfield Management at GFAFB is the 319 OSS/OSA.
- b) Scheduling agency for the GFAFB is the 319 OSS/OSO.
- c) U.S. Customs and Border Protection, North Dakota UAS Operations Center exercises CBP UAS operational authority.



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- d) Mission scheduling, reporting, operational and logistical support for CBP UAS operations is provided by the CBP UAS Flight Operations Center (FOC) located at the UAS operating site on Grand Forks AFB, hereafter referred to as the RED RIVER FOC.
- e) Primary point of contact for the safe, effective execution of each CBP UAS mission is the Red River FOC and the assigned CBP UAS Pilot-in-Command (UAS PIC).
- f) All operations will be in accordance with reference authorities cited in this document. Should conflicting written guidance exist, the most restrictive guidance will apply until resolved in writing by all signatories to this LOA, however, **SAFETY OF FLIGHT SHALL ALWAYS TAKE PRECEDENCE.**

2. RESPONSIBILITIES

a. The RED RIVER FOC shall:

- 1) Coordinate this LOA and other applicable agreements with all involved parties to effect site selection, preparation, equipage, usage, and sustainment of CBP UAS operations at GFAFB.
- 2) Provide the 319 OSS/OSO a schedule of CBP UAS flight activity (b) (7)(E) with updates as appropriate.
- 3) Any conflicts with the Transient aircraft schedule and the daily CBP UAS Flight Schedule will be sent to 319 OSS/OSO and 319 OSS/OSA.
- 4) Ensure appropriate GFAFB and/or other NOTAMs have been accurately published.
- 5) Notify GFAFB Air Traffic Control (ATC) anytime a flight is cancelled prior to takeoff in order to cancel applicable airspace reservations.
- 6) Coordinate with the 319 ARW to ensure CBP UAS mishaps at GFAFB are initially responded to, in accordance with (IAW) the CBP A&M UASOC Mishap Plan and the 319 ARW Aircraft Mishap Response Plan.
- 7) Coordinate with General Atomics-Aeronautical Systems Inc (GA-ASI) for the training of GFAFB first-responders on unique CBP UAS operating/handling characteristics and hazardous materials.
- 8) In-process and train applicable CBP UAS site personnel who will drive on the flight line, perform ground visual observer duties, or serve as the CBP UAS PIC.
- 9) Establish written procedures for visitor control and badging, and authorization for photography of CBP UAS-specific areas on GFAFB.
- 10) Ensure the GFAFB Fire Department Dispatch office (at the phone number listed on the daily flight schedule) is advised of any UAS ground or in-flight emergency (IFE) which occurs while GFAFB is closed.

NOTE: Another agency, i.e. Minneapolis Air Route Traffic Control Center

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(ARTCC), Air and Marine Operations Center (AMOC) etc. may fulfill this notification requirement.

11) Advise GFAFB ATC upon completion of all daily CBP UAS operations.

12) (b) (7)(E) [REDACTED] The FOC will retain the original for six (6) months.

b. The CBP UAS PIC for each flight shall:

1) Receive a one-time, initial GFAFB briefing prior to performing pilot duties for CBP UAS operations.

2) All UAS PICs are required to receive a briefing by GFAFB ATC, GFAFB Airfield Management, and the GFAFB Weather office prior to performing pilot duties. The in-briefs will be annotated on the CBP UAS Site In-processing Checklist, and will be kept on file.

3) Review appropriate GFAFB and other NOTAMs.

4) Deconflict power-up, uplink, and downlink frequencies and/or procedures with other UAS operators at GFAFB.

5) Use the call sign (b) (7)(E) for operational missions on (b) (7)(E) while in the traffic pattern, ensuring the UAS (b) (7)(E) transponder Mode (b) (7)(E) as assigned by ATC) with Mode (b) (7)(E)

6) Conduct departures and arrivals from GFAFB (b) (7)(E) (b) (7)(E)

7) Maintain a communication link with GFAFB ATC at all times when within GFAFB Approach Control Airspace. Primary link with GFAFB ATC will be via radio (b) (7)(E) (b) (7)(E)

8) Ensure the UAS complies with departure, arrival, and Lost Link routing profiles IAW this LOA and the COA.

9) Request change of altitude or airspace sector through ATC. The UAS will (b) (7)(E)

10) Advise ATC immediately if the UAS experiences Lost Link (an emergency), or if experiencing any other situation or emergency that requires airspace priority.

11) Maintain Lost Link mission routing and initial Lost Link parameters as described in paragraph 8 (Lost Link Procedures). Any changes to published Lost Link routing or parameters must be pre-coordinated with and approved by ATC prior to implementation.

12) (b) (7)(E) [REDACTED]

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c. GFAFB Airfield Operations shall:

- 1) Coordinate with the RED RIVER FOC for desired airspace.
- 2) Notify (b) (7)(E) as necessary, of CBP UAS flying periods.
- 3) Advise other military users of GFAFB of scheduled CBP UAS flight activity.
- 4) 319 OSS/OSA will provide Red River FOC Transient aircraft schedules and updates.
- 5) Provide the RED RIVER FOC emergency points of contact for Air Traffic Controllers and Weather support personnel for after-hours support.

NOTE: This information will be included by the RED RIVER FOC on the Daily CBP UAS Flight Schedule.

- 6) Ensure that any mishaps within GFAFB related to CBP UAS operations are initially responded to IAW the 319 ARW Mishap Plan.

3. GENERAL

- a. A qualified UAS PIC, as specified in the COA, shall be at the controls of the UAS at all times. An Instructor Pilot (IP) will be present in the GCS if a pilot is non-current or in training status.
- b. The UAS PIC will abide by any guidance, control instruction, and/or direction issued by ATC, CBP Government Flight Representative, or GA-ASI UAS Site Manager to suspend operations due to a safety-of-flight issue.
- c. All navigation systems (b) (7)(E)
(b) (7)(E)

4. CBP UAS OPERATIONS AT GRAND FORKS AIR FORCE BASE

a. General Procedures

- 1) Staging of CBP UAS aircraft prior to flight and chocking of the CBP UAS after flight will be accomplished in front of (b) (7)(E). Any pre/post flight activity will be kept within (b) (7)(E) of the hangar doors so that the taxiway in front of (b) (7)(E) will not be blocked.
- 2) Associated CBP UAS flight and ground equipment will be at the CBP UAS operational site located on the ramp outside of or within (b) (7)(E). No equipment will be permanently positioned on the paved portion of the main ramp area adjacent to the CBP UAS operational site. (Attachment 1)



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- 3) An alternate operating location will be (b) (7)(E) and will be available anytime the primary location cannot be used (requires coordination with airfield manager and other base agencies.) (Attachment 1)

b. Flight Operations

- 1) Associated CBP UAS flight equipment and the Mission Control Center will be at the CBP UAS RED RIVER FOC (b) (7)(E)
- 2) Normal CBP UAS operations will be at (b) (7)(E)
- 3) The GFAFB (b) (7)(E) airspace extends out to (b) (7)(E) nautical miles, surface to (b) (7)(E) and is (b) (7)(E) airspace directly to (b) (7)(E) airspace covers (b) (7)(E) square miles from (b) (7)(E). All CBP UAS operations in GFAFB (b) (7)(E) (b) (7)(E) airspace shall be conducted under (b) (7)(E) as specified in 14 CFR Part 91 and IAW the COA.
- 4) The UAS PIC shall have direct radio communications with GFAFB ATC for UAS ground and flight operations. Communications for taxi and takeoff clearance shall be accomplished using (b) (7)(E). After takeoff, GFAFB Tower (b) (7)(E) (b) (7)(E) AOR. (Attachment 2)
- 5) A primary radio is required for ATC communication. At all times, the UAS PIC will also keep (b) (7)(E) in the GCS for communications with ATC. If complete radio failure occurs, a UAS crewmember or the FOC will contact ATC at:

GFAFB TOWER: (b) (7)(E)
GFAFB RAPCON: (b) (7)(E)

- 6) Unless specifically prohibited by COA (b) (7)(E) (b) (7)(E) airspace. However, CBP UAS operations (b) (7)(E) in the GFAFB (b) (7)(E) airspace. If approved by the COA and Airfield Operations Flight Commander, or designated representative, (b) (7)(E) (b) (7)(E)
- 7) The CBP UAS traffic pattern (b) (7)(E). If unable to comply, ATC SHALL be advised and changes to flight patterns will be approved, traffic permitting (b) (7)(E)
- 8) The CBP UAS shall be considered a (b) (7)(E) aircraft for Same Runway Separation (SRS) and (b) (7)(E) aircraft for "Wake Turbulence" separation.
- 9) A "Closed traffic pattern" may be approved by GFAFB ATC however (b) (7)(E) (b) (7)(E)

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- 10) Unless (b) (7)(E) one or more deployed ground visual observers are required by the COA. The observers shall have direct communication with the UAS PIC when the UAS is within GFAFB (b) (7)(E) (b) (7)(E) and shall immediately inform the UAS PIC of conflicting traffic. The PIC will coordinate with ATC prior to executing any maneuvers needed to avoid conflicting traffic.
- 11) Unless (b) (7)(E) (b) (7)(E) be flown to comply with FAA-mandated ground visual observer observation limits specified in the COA.
- 12) Manned aircraft emergencies shall take priority over unmanned aircraft emergencies.
- 13) A "Lost Link" situation is (b) (7)(E) (b) (7)(E) non-intermittent loss of the command link from the GCS to the UAS. See paragraph 8 (Lost Link Procedures) for further guidance.

5. TRAFFIC PATTERN PROCEDURES

- a. The UAS will adhere to standard traffic patterns as determined by GFAFB ATC however, IAW the COA (b) (7)(E) The UAS will avoid the flow of manned aircraft flights and maneuver, or if required, hold in a flight pattern as directed by GFAFB ATC. The UAS will normally arrive and depart via a (b) (7)(E) unless directed otherwise by GFAFB ATC.
- b. The UAS shall remain (b) (7)(E) while in the pattern at GFAFB, unless directed otherwise by GFAFB ATC.
- c. Multiple UAS low approaches or touch-and-go landings for formal UAS syllabus aircrew training, pilot currency/re-currency requirements or for functional, maintenance checks of the UAS and its components may be performed with GFAFB ATC approval. All formal and informal training and maintenance flight checks will be conducted on a (b) (7)(E) (b) (7)(E) basis with manned aircraft operations within the GFAFB traffic pattern.
 - 1) (b) (7)(E) (b) (7)(E) lateral limits. Traffic patterns will be flown (b) (7)(E) of the airfield.
 - 2) (b) (7)(E) (b) (7)(E) lateral limits. Traffic patterns are flown (b) (7)(E) the airfield.
- d. Unless otherwise directed by GFAFB ATC, standard CBP UAS (b) (7)(E) (b) (7)(E)
- e. In the event holding is required, the UAS will be instructed to hold within the GFAFB (b) (7)(E) in accordance with GFAFB Tower instructions, remaining clear of the Runway (b) (7)(E)

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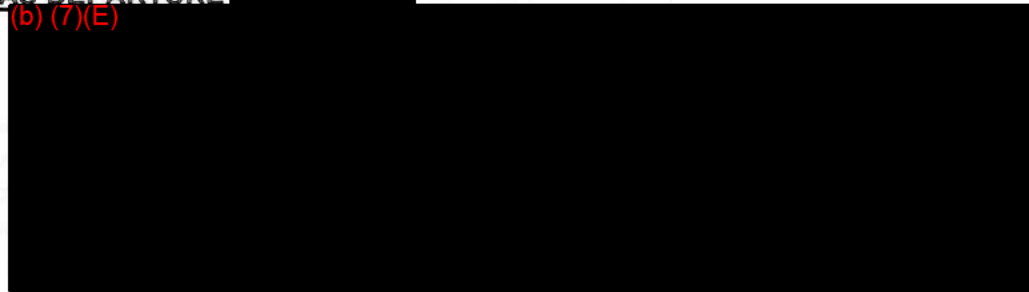
- f. (b) (7)(E) authorized by COA may be conducted.

6. DEPARTURE PROCEDURES

- a. When ready for departure, the UAS PIC will call GFAFB Tower for departure clearance.

1) UAS DEPARTURE (b) (7)(E)

- a. (b) (7)(E)

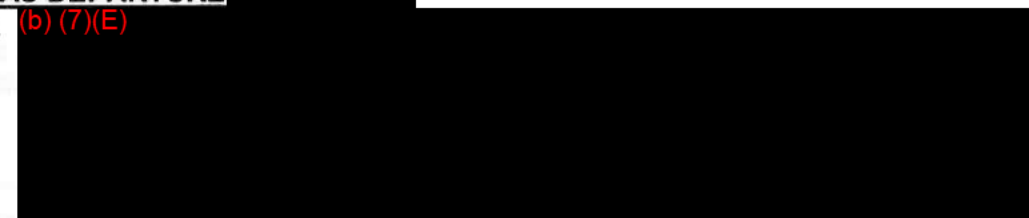


Exit the GFAFB (b) (7)(E)

- b. Climb to the assigned altitude, and/or proceed on-course (b) (7)(E) instructions.

2) UAS DEPARTURE (b) (7)(E)

- a. (b) (7)(E)



Exit the GFAFB (b) (7)(E)

- b. Climb to the assigned altitude, and/or proceed on-course (b) (7)(E) instructions.

7. RECOVERY PROCEDURES

- a. The UAS PIC will establish communications with GFAFB RAPCON prior to (b) (7)(E) when ready to return to GFAFB for recovery. GFAFB RAPCON will provide appropriate recovery instructions. (Attachment 2)

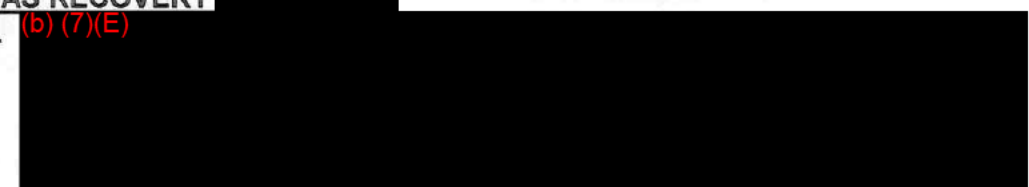
NOTE: If GFAFB Tower or RAPCON is closed (b) (7)(E)

(b) (7)(E)

(b) (7)(E) in the GFAFB area.

1) UAS RECOVERY (b) (7)(E)

- a. (b) (7)(E)





(b) (7)(E)

- b. Low approaches, touch-and-go landings, and multiple approaches may be coordinated with GFAFB ATC (b) (7)(E) basis with manned aircraft, provided visual observation requirements are met IAW the COA.

2) UAS RECOVERY (b) (7)(E)

a. (b) (7)(E)

- b. Low approaches, touch-and-go landings, and multiple approaches may be coordinated with GFAFB ATC (b) (7)(E) basis with manned aircraft, provided visual observation requirements are met IAW the COA.

- b. Unless otherwise directed by GFAFB ATC, standard CBP UAS (b) (7)(E) instructions will be a (b) (7)(E)

- c. In the event holding is required, the UAS will be instructed to hold with-in the GFAFB (b) (7)(E) in accordance with GFAFB Tower or RAPCON instructions, remaining clear of the Runway (b) (7)(E) arrival/departure course and (b) (7)(E)

- d. Holding will normally be at (b) (7)(E) MSL.

8. FLIGHT TERMINATION, LOST LINK, LOST COMMUNICATION EMERGENCY MISSION PROFILE (LLEMP) PROCEDURES

Different scenarios exist for "Flight Termination, Lost Link, or Lost Communication". These procedures are based on the location of the UAS when the "link" with the aircraft is lost.

- a. In all cases, when a loss of aircraft link occurs, the UAS PIC (b) (7)(E)

(b) (7)(E)

(b) (7)(E)



(b) (7)(E)



- b. If loss of aircraft link occurs between the UAS and the GCS while on the ground, the UAS will follow procedures delineated in Attachment 4 ***“Lost Link-Aircraft on the Ground”***.
- c. In the event of a Lost Link situation during GFAFB **TRAFFIC PATTERN OPERATIONS** (i.e. touch and goes) the UAS (b) (7)(E)

(b) (7)(E)





(b) (7)(E)

- d. If the lost link condition occurs during **DEPARTURE OR RECOVERY**, the UAS (b) (7)(E)

(b) (7)(E)

- e. **WHEN CLEARED TO FLY A ROUTE**, the UAS (b) (7)(E)

(b) (7)(E)

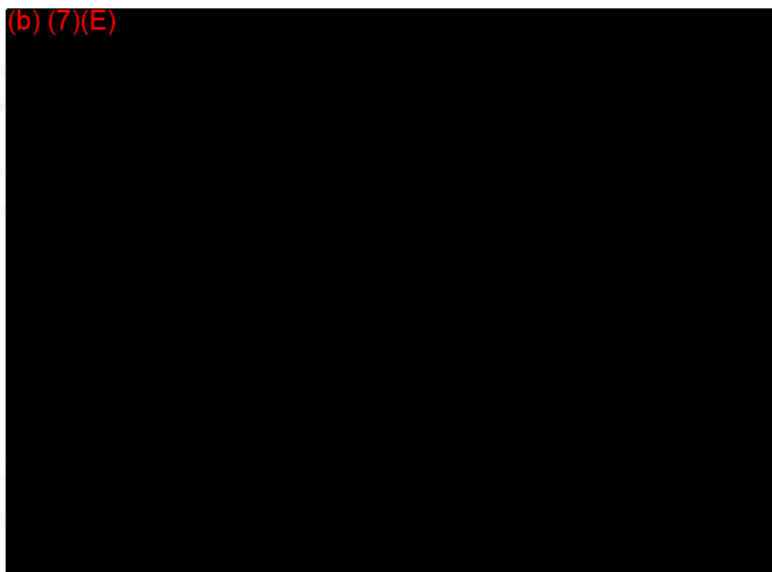
- f. (b) (7)(E)

(b) (7)(E)

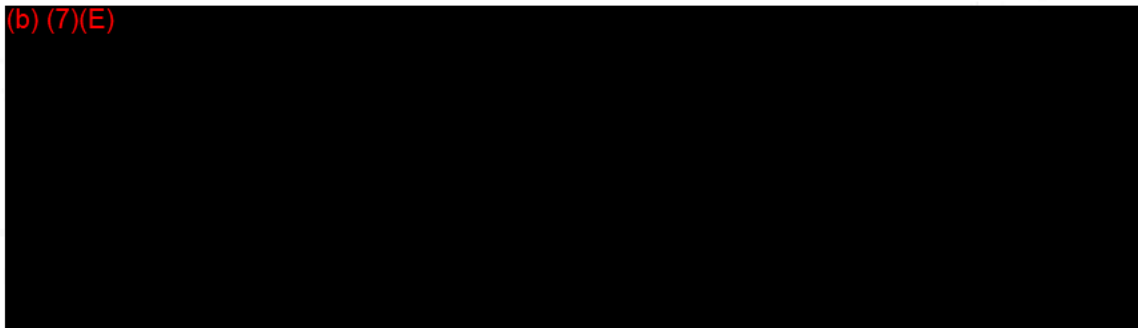
POINT	FIX	RADIAL	DME	LAT	LON
(b) (7)(E)					



(b) (7)(E)



g. (b) (7)(E)



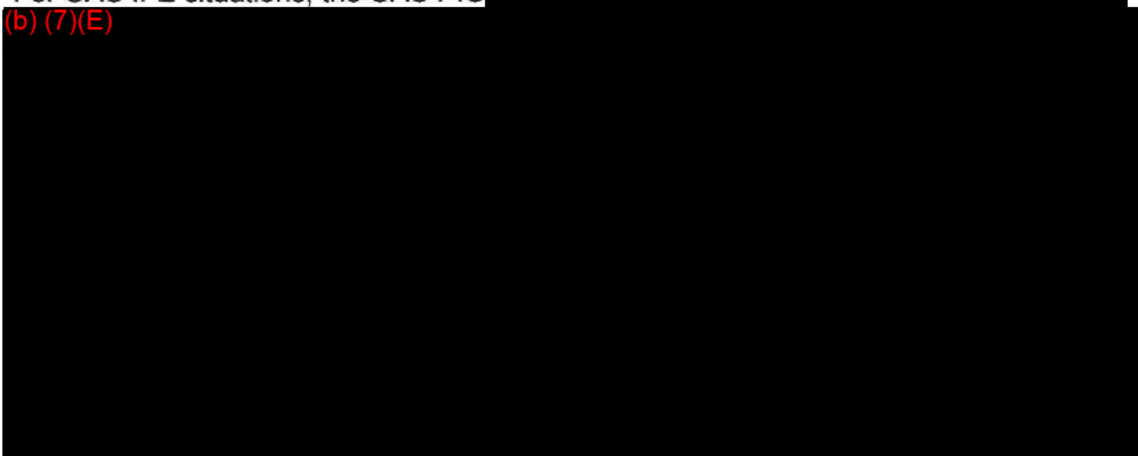
9 (b) (7)(E) TRANSPONDER FAILURE

If the UAS (b) (7)(E) transponder fails, the UAS PIC (b) (7)(E)



10. EMERGENCIES

a. For UAS IFE situations, the UAS PIC (b) (7)(E)



b. (b) (7)(E)





(b) (7)(E)

11. ADMINISTRATION

- a. The CBP A&M UAS FOC and GFAFB shall initiate a review of this LOA (b) (7)(E) (b) (7)(E) (b) (7)(E) to determine applicable revisions or modifications. This does not preclude proposed revisions or modifications to this LOA made by a signatory party at any time; such revisions or modifications shall be effective upon written approval by all parties.
- b. This LOA shall be revised or modified should the FAA COA or a NOTAM be issued (or amended) which substantively changes the UAS operating procedures from GFAFB.
- c. Public Affairs Guidance
 - 1) Specific inquiries regarding the mission of the Red River FOC, CBP aircraft, operating schedules or personnel from the public or the news media shall be referred to the Deputy Director Air Operations (DDAO) NDAB UAS Operations at (b) (7)(E)
 - 2) When it is believed that Red River FOC personnel, CBP A&M UAS or other aircraft are involved in an aircraft incident or accident, take the following action:
 - 3) (b) (7)(E)
 - 4) (b) (7)(E)
 - 5) Red River FOC personnel, regardless of involvement (b) (7)(E) (b) (7)(E)
 - 6) **GFAFB personnel** (b) (7)(E) (b) (7)(E)
- d. Financial liability rests with the Department of Homeland Security (DHS) for any expenses related to a CBP UAS mishap, reclamation, and subsequent investigation IAW the agreement between DHS and Department of Defense.
- e. CBP will reimburse all support required by GFAFB and GFAFB contract personnel. If and when applicable, GFAFB ATC overtime dollars will be transferred to GFAFB for support of CBP UAS operations IAW the Base Support Agreement.



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(b) (6), (b) (7)(C)

(b) (6), (b) (7)(C)

(b) (6), (b) (7)(C) UAS Operations
North Dakota Air Branch

319th Air Refueling Wing

Attachments:

1. CBP A&M primary and alternate location
2. CBP A&M UAS TFR and Arrival/Departure Procedure depiction
3. (b) (7)(E) UAS Lost Link Holding Point depiction
4. CBP A&M UAS Lost Link procedure and Emergency Mission Profile

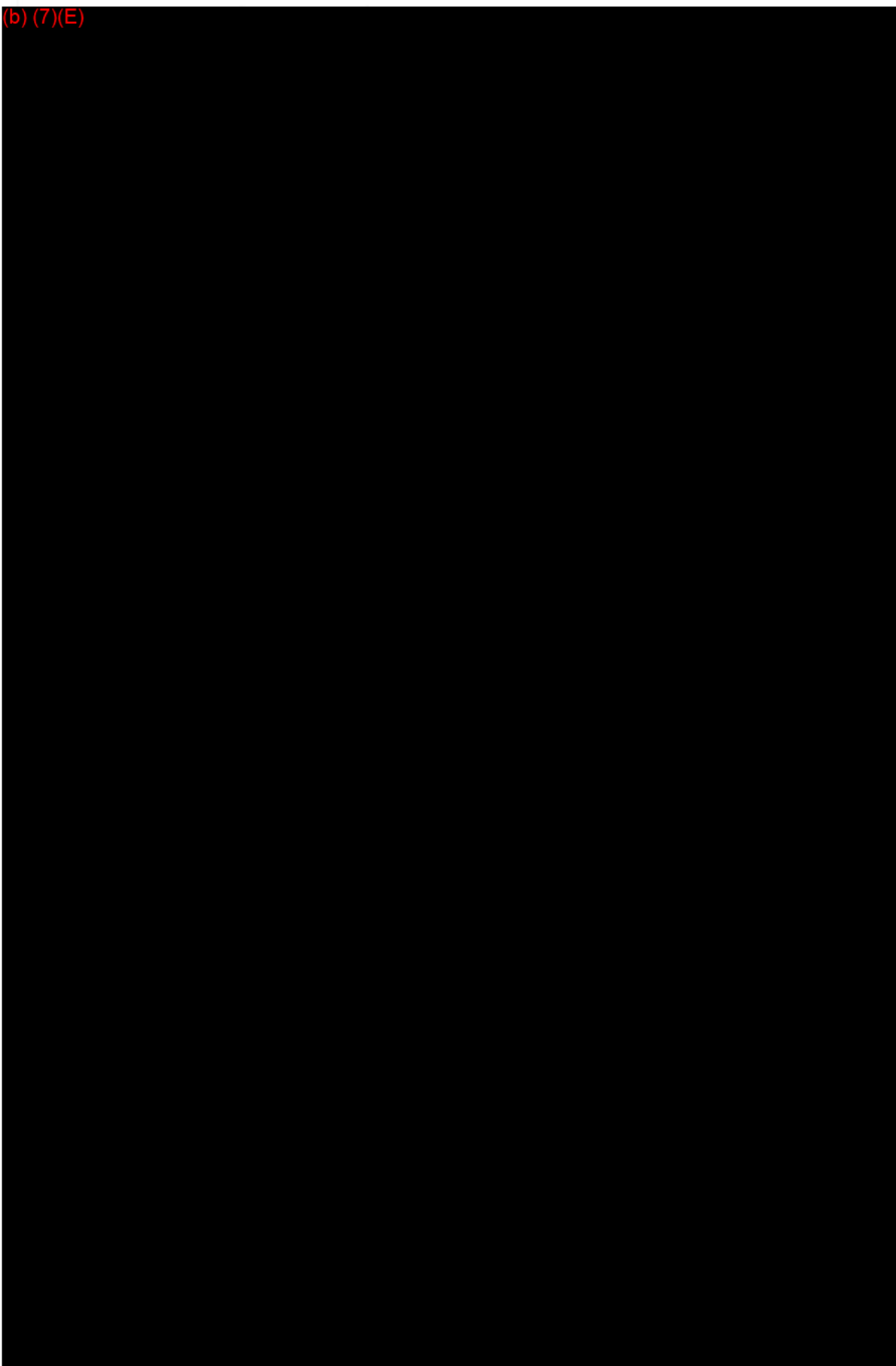
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(b) (7)(E)



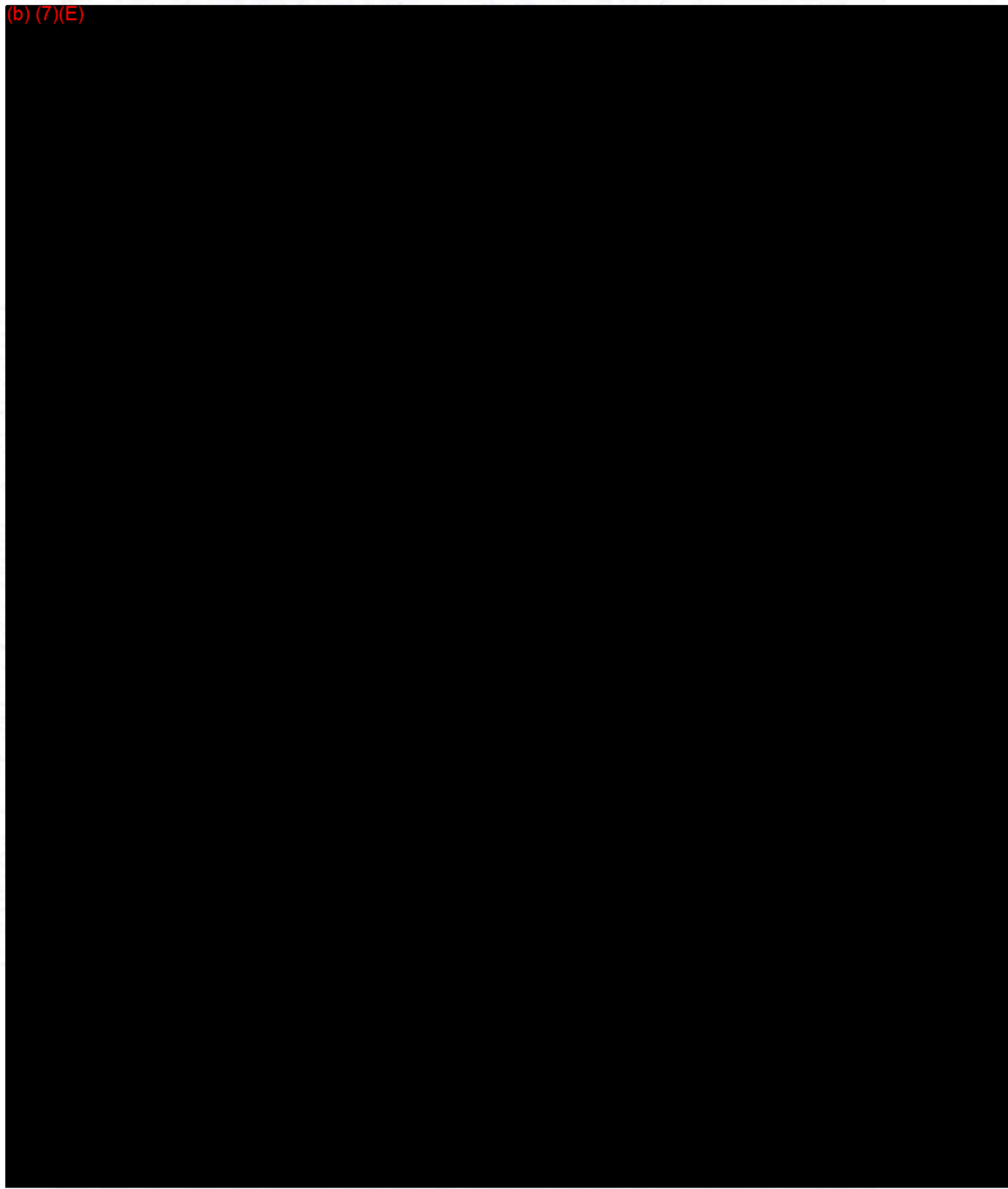
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(b) (7)(E)



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(b) (7)(E)



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ATTACHMENT 4 FLIGHT TERMINATION, LOST LINK, LOST COMMUNICATION PROCEDURES

Event	Flight Termination	Lost Link	Loss Communications
Conditions	<ul style="list-style-type: none">- Emergency situation- Unable to sustain flight and return to base	<ul style="list-style-type: none">- Emergency situation- Loss of command uplink, downlink, or both links between the ground control station and the UA	<ul style="list-style-type: none">- Loss of radio communications between the PIC and ATC (b) (7)(E)
Procedures	In the event of Flight Termination, the PIC (b) (7)(E)	In the event of a Lost Link condition, the PIC (b) (7)(E)	In the event of Lost Radio Communications between the PIC and ATC, the PIC (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.	(b) (7)(E)	(b) (7)(E)
	Inform ATC of the following as soon as possible: (b) (7)(E)	Inform ATC of the following as soon as possible: (b) (7)(E) - SEE PARAGRAPH 8 OF THE CBP/GFAFB LOA (b) (7)(E)	(b) (7)(E)
	(b) (7)(E)		
	(b) (7)(E)		
	(b) (7)(E)		



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Lost Link – Aircraft on the Ground

Time/Condition	Process
(b) (7)(E)	(b) (7)(E)
NOTES	
1. (b) (7)(E)	
2. (b) (7)(E)	

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