


DEPARTMENT OF TRANSPORTATION FEDERAL AVIATION ADMINISTRATION CERTIFICATE OF WAIVER OR AUTHORIZATION	
ISSUED TO	U.S. Department of the Interior
	Office of Aviation Services 300 E. MALLARD DR., STE 200 Boise, ID 83706-3991
	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 small Unmanned Aircraft System(s) weighting less than 55 lbs., in Class G airspace under the provisions of this authorization. See Special Provisions.
LIST OF WAIVED REGULATIONS BY SECTION AND TITLE	N/A
STANDARD PROVISIONS	
	1. A copy of the application made for this certificate shall be attached and become a part hereof. 2. This certificate shall be presented for inspection upon the request of any authorized representative of the Federal Aviation Administration, or of any State or municipal official charged with the duty of enforcing local laws or regulations. 3. The holder of this certificate shall be responsible for the strict observance of the terms and provisions contained herein. 4. This certificate is nontransferable.
	Note-This certificate constitutes a waiver of those Federal rules or regulations specifically referred to above. It does not constitute a waiver of any State law or local ordinance.
SPECIAL PROVISIONS	
	Special Provisions are set forth and attached.
	This certificate, 2016-CSA-185-COA REV 1, is effective from April 11, 2017, through July April 10, 2019, and is subject to cancellation at any time upon notice by the Administrator or his/her authorized representative. Should a renewal become necessary, the Proponent shall advise the Federal Aviation Administration (FAA), in writing, no later than 45 business days prior to the requested effective date.
	BY DIRECTION OF THE ADMINISTRATOR
<u>FAA Headquarters, AJV-115</u> (Region)	 <u>Scott J. Gardner</u> (Signature)
<u>April 10, 2017</u> (Date)	<u>Acting Manager, UAS Tactical Operations Section</u> (Title)

COA Number: 2016-CSA-185

Issued To: U.S. Department of the Interior, referred herein as the “Proponent”

Address: Office of Aviation Services
300 E. MALLARD DR., STE 200
Boise, ID 83706-3991

STANDARD PROVISIONS

A. General.

The review of this activity is based upon current understanding of Unmanned Aircraft System (UAS) operations and their impact on the National Airspace System (NAS). This Certificate of Waiver or Authorization (COA) will not be considered a precedent for future operations. As changes in, or understanding of, UAS operations occur, the associated limitations and conditions may be adjusted.

All personnel engaged in the operation of the UAS in accordance with this authorization must read and comply with the conditions, limitations, and provisions of this COA.

A copy of the COA including the special limitations must be immediately available to all operational personnel at each operating location whenever UAS operations are being conducted.

This COA may be canceled at any time by the Administrator, a person authorized to grant the authorization, or a representative designated to monitor a specific operation. As a general rule, this authorization may be canceled when it is no longer required, when there is an abuse of its provisions, or when unforeseen safety factors develop. Failure to comply with the authorization is cause for cancellation. All cancellations will be provided in writing to the proponent.

During the time this COA is approved and active, a site safety evaluation/visit may be accomplished to ensure COA compliance, assess any adverse impact on ATC or airspace, and ensure this COA is not burdensome or ineffective. Deviations, accidents/incidents/mishaps, complaints, etc. will prompt a COA review or site visit to address the issue. Refusal to allow a site safety evaluation/visit may result in cancellation of the COA. Note: This section does not pertain to agencies that have other existing agreements in place with the FAA.

Public Aircraft Operations are defined by statutes Title 49 USC §40102(a)(41) and §40125. All public aircraft operations conducted under a COA must comply with the terms of the statutes.

B. Airworthiness Certification.

The unmanned aircraft must be shown to be airworthy to conduct flight operations in the NAS. The proponent has made its own determination that the unmanned aircraft is airworthy. The unmanned aircraft must be operated in strict compliance with all provisions and conditions contained in the Airworthiness Safety Release (AWR), including all documents and provisions referenced in the COA application.

1. A configuration control program must be in place for hardware and/or software changes made to the UAS to ensure continued airworthiness. If a new or revised Airworthiness Release is generated as a result of changes in the hardware or software affecting the operating characteristics of the UAS, notify the UAS Integration Office via email at 9-AJV-115-UASOrganization@faa.gov of the changes as soon as practical.
 - a. Software and hardware changes should be documented as part of the normal maintenance procedures. Software changes to the aircraft and control station as well as hardware system changes are classified as major changes unless the agency has a formal process accepted by the FAA. These changes should be provided to the UAS Integration Office in summary form at the time of incorporation.
 - b. Major modifications or changes, performed under the COA, or other authorizations that could potentially affect the safe operation of the system, must be documented and provided to the FAA in the form of a new AWR, unless the agency has a formal process, accepted by the FAA.
 - c. All previously flight proven systems, to include payloads, may be installed or removed as required and that activity must be recorded in the unmanned aircraft and ground control stations logbooks by persons authorized to conduct UAS maintenance. Describe any payload equipment configurations in the UAS logbook that will result in a weight and balance change, electrical loads, and or flight dynamics, unless the agency has a formal process, accepted by the FAA.
 - d. For unmanned aircraft system discrepancies, a record entry should be made by an appropriately rated person to document the finding in the logbook. No flights may be conducted following major changes, modifications or new installations unless the party responsible for certifying airworthiness has determined the system is safe to operate in the NAS and a new AWR is generated, unless the agency has a formal process, accepted by the FAA. The successful completion of these major changes, modifications or new installations must be recorded in the appropriate logbook, unless the agency has a formal process, accepted by the FAA.
2. The unmanned aircraft must be operated in strict compliance with all provisions and conditions contained within the spectrum analysis assigned and authorized for use within the defined operations area.
3. All items contained in the application for equipment frequency allocation must be adhered to, including the assigned frequencies and antenna equipment characteristics. A ground operational check to verify that the control station can communicate with the aircraft (frequency integration check) must be conducted prior to the launch of the unmanned aircraft to ensure any electromagnetic interference does not adversely affect control of the aircraft.

C. Safety of Flight.

1. The Proponent or delegated representative is responsible for halting or canceling activity conducted under the provisions of this COA if, at any time, the safety of persons or property on the ground or in the air is in jeopardy, or if there is a failure to comply with the terms or conditions of this authorization.
2. Sterile Cockpit Procedures.
 - a. No crewmember may perform any duties during a critical phase of flight not required for the safe operation of the aircraft.
 - b. Critical phases of flight include all ground operations involving:
 - 1) Taxi (movement of an aircraft under its own power on the surface of an airport),
 - 2) Take-off and landing (launch or recovery), and
 - 3) All other flight operations in which safety or mission accomplishment might be compromised by distractions.
 - c. No crewmember may engage in, nor may any pilot in command (PIC) permit, any activity during a critical phase of flight which could:
 - 1) Distract any crewmember from the performance of his/her duties, or
 - 2) Interfere in any way with the proper conduct of those duties.
 - d. The pilot and/or the PIC must not engage in any activity not directly related to the operation of the aircraft. Activities include, but are not limited to: operating UAS sensors or other payload systems.
3. See-and-Avoid.
 - a. Unmanned aircraft have no on-board pilot to perform see-and-avoid responsibilities; therefore, when operating outside of active restricted and warning areas approved for aviation activities, provisions must be made to ensure that an equivalent level of safety exists for unmanned operations. Adherence to 14 CFR Part 91 §91.111, §91.113 and §91.115, is required.
 - b. The PIC is responsible:
 - 1) To remain clear and give way to all manned aviation operations and activities at all times,
 - 2) For the safety of persons or property on the surface with respect to the UAS operation,
 - 3) For ensuring that there is a safe operating distance between aviation activities and unmanned aircraft (UA) at all times, and
 - 4) For operating in compliance with CFR Parts 91.111, 91.113 and 91.115.

- c. The PIC is responsible to ensure that any visual observer (VO):
 - 1) Can perform their required duties,
 - 2) Are able to see the UA and the surrounding airspace throughout the entire flight, and
 - 3) Are able to provide the PIC with the UA's flight path and proximity to all aviation activities and other hazards (e.g., terrain, weather, structures) sufficiently for the PIC to exercise effective control of the UA to prevent the UA from creating a collision hazard.
- d. VO(s) must be used at all times and must maintain instantaneous communication with the PIC. Electronic messaging or texting is not permitted during flight operations.
- e. The use of multiple successive VO(s) (daisy chaining) is prohibited.
- f. VO(s) must be able to communicate clearly to the PIC any instructions required to remain clear of conflicting traffic.
- g. All VO(s) must complete sufficient training to communicate to the PIC any information required to remain clear of conflicting traffic, terrain, and obstructions, maintain proper cloud clearances, and provide navigational awareness. This training, at a minimum, must include knowledge of:
 - 1) Their responsibility to assist PICs in complying with the requirements of:
 - Section §91.111, Operating Near Other Aircraft,
 - Section §91.113, Right-of-Way Rules: Except Water Operations,
 - Section §91.115, Right-of-Way Rules: Water Operations,
 - Section §91.119, Minimum Safe Altitudes: General, and
 - Section §91.155, Basic VFR Weather Minimums
 - 2) Air traffic and radio communications, including the use of approved air traffic control/pilot phraseology
 - 3) Appropriate sections of the Aeronautical Information Manual (AIM)
- h. The Proponent must not operate in Restricted Areas, Prohibited Areas, Special Flight Rule Areas or the Washington DC Flight Restricted Zone. Such areas are depicted on charts available at http://www.faa.gov/air_traffic/flight_info/aeronav/. Additionally, aircraft operators should beware of and avoid other areas identified in Notices to Airmen (NOTAMS) that restrict operations in proximity to Power Plants, Electric Substations, Dams, Wind Farms, Oil Refineries, Industrial Complexes, National Parks, The Disney Resorts, Stadiums, Emergency Services, Military or other Federal Facilities unless approval is received from the appropriate authority prior to the UAS Mission.
- i. The unmanned aircraft will be registered prior to operations in accordance with Title 14 of the Code of Federal Regulations.

D. Reporting Requirements

1. Documentation of all operations associated with UAS activities is required regardless of the airspace in which the UAS operates. NOTE: Negative (zero flights) reports are required.
2. The Proponent must submit the following information on a monthly basis UAS COA On-Line:
 - a. Name of Proponent, and aircraft registration number,
 - b. UAS type and model,
 - c. All operating locations, to include city name and latitude/longitude,
 - d. Number of flights (per location, per aircraft),
 - e. Total aircraft operation hours,
 - f. Takeoff or landing damage, and
 - g. Equipment malfunction. Required reports include, but are not limited to, failures or malfunctions to the:
 - (1) Control station
 - (2) Electrical system
 - (3) Fuel system
 - (4) Navigation system
 - (5) On-board flight control system
 - (6) Powerplant
3. The number and duration of lost link events (control, performance and health monitoring, or communications) per UAS, per flight.

4. Incident/Accident/Mishap Reporting

After an incident or accident that meets the criteria below, and within 24 hours of that incident, accident or event described below, the proponent must provide initial notification of the following to the FAA via email at [mailto: 9-AJV-115-UASOrganization@faa.gov](mailto:9-AJV-115-UASOrganization@faa.gov) and via the UAS COA On-Line forms (Incident/Accident).

- a. All accidents/mishaps involving UAS operations where any of the following occurs:
 - 1) Fatal injury, where the operation of a UAS results in a death occurring within 30 days of the accident/mishap
 - 2) Serious injury, where the operation of a UAS results in:
 - Hospitalization for more than 48 hours, commencing within 7 days from the date of the injury was received;
 - A fracture of any bone (except simple fractures of fingers, toes, or nose);
 - Severe hemorrhages, nerve, muscle, or tendon damage;
 - Involving any internal organ; or

- Involves second- or third-degree burns, or any burns affecting more than 5 percent of the body surface.
- 3) Total unmanned aircraft loss
- 4) Substantial damage to the unmanned aircraft system where there is damage to the airframe, power plant, or onboard systems that must be repaired prior to further flight
- 5) Damage to property, other than the unmanned aircraft.
- b. Any incident/mishap that results in an unsafe/abnormal operation including but not limited to
 - 1) A malfunction or failure of the unmanned aircraft's on-board flight control system (including navigation)
 - 2) A malfunction or failure of ground control station flight control hardware or software (other than loss of control link)
 - 3) A power plant failure or malfunction
 - 4) An in-flight fire
 - 5) An aircraft collision involving another aircraft.
 - 6) Any in-flight failure of the unmanned aircraft's electrical system requiring use of alternate or emergency power to complete the flight
 - 7) A deviation from any provision contained in the COA
 - 8) A deviation from an ATC clearance and/or Letter(s) of Agreement/Procedures
 - 9) A lost control link event resulting in
 - Fly-away, or
 - Execution of a pre-planned/unplanned lost link procedure.
- c. Initial reports must contain the information identified in the COA On-Line Accident/Incident Report.
- d. Follow-on reports describing the accident/incident/mishap(s) must be submitted by providing copies of proponent aviation accident/incident reports upon completion of safety investigations.
- e. The above procedures are not a substitute for separate accident/incident reporting required by the National Transportation Safety Board under 49 CFR Part §830.5.
- f. For other than Department of Defense operations, this COA is issued with the provision that the FAA be permitted involvement in the proponent's incident/accident/mishap investigation as prescribed by FAA Order 8020.11, Aircraft Accident and Incident Notification, Investigation, and Reporting.

E. Notice to Airmen (NOTAM).

1. A distant (D) NOTAM must be issued prior to conducting UAS operations. The NOTAM must identify actual coordinates and a Radial/DME fix of a prominent navigational aid, with a radius no larger than that where visual line of sight with the UA can be maintained. The NOTAM must be filed to indicate the defined operations area and periods of UA activity. NOTAMs for generalized, wide-area, or continuous periods are not acceptable. This requirement may be accomplished:
 - a. Through the proponent's local base operations or NOTAM issuing authority, or
 - b. By contacting the NOTAM Flight Service Station at 1-877-4-US-NTMS (1- 877-487- 6867) not more than 72 hours in advance, but not less than 24 hours for UAS operations prior to the operation. The issuing agency will require the:
 - 1) Name and address of the pilot filing the NOTAM request
 - 2) Location, altitude and operating area
 - 3) Time and nature of the activity.
2. Due to the immediacy of some tactical operations, this NOTAM notification may be reduced to no less than 30 minutes prior to operations when the DOI was not aware of the need to conduct the operation more than 24 hours in advance.

F. Night Operations.

Small UAS operations may be conducted at night, as defined in 14 CFR § 1.1, provided:

- a. All operations under the approved COA must use one or more visual observers (VO);
- b. Prior to conducting operations that are the subject of the COA, the remote pilot in command (PIC) and VO must be trained to recognize and overcome visual illusions caused by darkness, and understand physiological conditions which may degrade night vision. This training must be documented and must be presented for inspection upon request from the Administrator or an authorized representative;
- c. The sUA must be equipped with lighted anti-collision lighting visible from a distance of no less than 3 statute miles. The intensity of the anti-collision lighting may be reduced if, because of operating conditions, it would be in the interest of safety to do so.

Note: Night, as defined in 14 CFR § 1.1 is equal to approximately 30 minutes after sunset until 30 minutes before sunrise.

AIR TRAFFIC CONTROL SPECIAL PROVISIONS

A. Coordination Requirements.

1. Compliance with Standard Provisions, E. Notice to Airmen (NOTAM) satisfies the coordination requirement. Operator must cancel NOTAMs when UAS operations are completed or will not be conducted.
2. Coordination and de-confliction between Military Training Routes (MTR) and Special Use Airspace (SUA) is the operator's responsibility. When identifying an operational area the operator must evaluate whether an MTR or SUA will be affected. In the event

the UAS operational area overlaps an MTR or SUA, the operator will contact the scheduling agency 24 hours in advance to coordinate and de-conflict. Scheduling agencies for MTRs are listed in the Area Planning AP/1B Military Planning Routes North and South America. If unable to gain access to AP/1B contact the FAA at email address <mailto:9-AJV-115-UASOrganization@faa.gov> with the IR/VR routes affected and the FAA will provide the scheduling agency information. Scheduling agencies for SUAs are listed in the FAA JO 7400.8. Approval from the scheduling agency is required for regulatory SUA, but not for MTR's and non-regulatory SUA. If prior coordination and de-confliction does not take place 24 hours in advance, the operator must exercise extreme caution and remain vigilant of all MTRs and/ or non-regulatory SUAs. However, due to the immediacy of some tactical operations, this notification may be reduced to no less than 30 minutes prior to operations when the DOI was not aware of the need to conduct the operation more than 24 hours in advance.

B. Communication Requirements.

When operating in the vicinity of an airport without an operating control tower the PIC will announce operations on appropriate Unicom/CTAF frequencies alerting manned pilots of UAS operations.

C. Flight Planning Requirements.

This COA will allow small UAS (less than 55 pounds) operations during VMC conditions only within Class G airspace under the following limitations:

1. In Class G airspace, and
2. Beyond the following distances from the airport reference point (ARP) of a public use airport, heliport, gliderport, or water landing port listed in the Airport/Facility Directory, Alaska Supplement, or Pacific Chart Supplement of the U.S. Government Flight Information Publications:
 - a. 5 nautical miles (NM) from an airport having an operational control tower, or
 - b. 3 NM from an airport having a published instrument flight procedure, but not having an operational control tower, or
 - c. 2 NM from an airport not having a published instrument flight procedure or an operational control tower, or
 - d. 2 NM from a heliport.
3. The PIC is responsible for identifying the appropriate ATC jurisdiction nearest to the area of operations defined by the NOTAM.

D. Procedural Requirements.

This COA authorizes the Proponent to conduct UAS flight operations strictly within a "defined operating area" as identified under the required provision of Section E. Notice to Airmen (NOTAM) of this COA.

1. A "defined operating area" is described as a location identified by a Very High Frequency Omnidirectional Range (VOR) Radial/Distance Measuring Equipment (DME) fix. This location must have a defined perimeter that is no larger than that where visual line of sight with the UA can be maintained and a defined operational.

2. UAS operations must remain within this “defined operating area”. The Proponent will discover and manage all risks and associated liabilities that exist within the defined operating area and all risks must be legitimately mitigated to assure the safety of people and property.
3. The UAS must remain within visual line of sight of the PIC and/or VO(s) at all times. The PIC and VO(s) must be positioned such that they can maintain sufficient visual contact with the UA in order to determine its attitude, altitude, and direction of flight. The PIC is responsible to ensure that the UA remains within the defined operating area. “Out of Sight”, or “Behind the Obstruction” flight operations are prohibited.

E. Emergency/Contingency Procedures.

1. Lost Link Procedures:

- a. In the event of lost link, the UA must initiate a flight maneuver that ensures timely landing of the aircraft. Lost link airborne operations shall be predictable and the UA shall remain within the defined operating area filed in the NOTAM for that specific operation. In the event that the UA leaves the defined operating area, and the flight track of the UA could potentially enter controlled airspace, the PIC will immediately contact the appropriate ATC facility having jurisdiction over the controlled airspace to advise them of the UASs last known altitude, speed, direction of flight and estimated flight time remaining and the Proponent’s action to recover the UA.
- b. Lost link orbit points will not coincide with the centerline of published Victor airways.
- c. The UA lost link flight track will not transit or orbit over populated areas.
- d. Lost link programmed procedures must de-conflict from all other unmanned operations within the operating area.

2. Lost Visual Line of Sight:

If an observer loses sight of the UA, they must notify the PIC immediately. If the UA is visually reacquired promptly, the mission may continue. If not, the PIC will immediately execute the lost link procedures.

3. Lost Communications:

If communication is lost between the PIC and the observer(s), the PIC must immediately execute the lost link procedures.

AUTHORIZATION

This Certificate of Waiver or Authorization does not, in itself, waive any Title 14 Code of Federal Regulations, nor any state law or local ordinance. Should the proposed operation conflict with any state law or local ordinance, or require permission of local authorities or property owners, it is the responsibility of the U.S. Department of the Interior to resolve the matter. This COA does not authorize flight within regulatory Special Use Airspace without approval from the using agency. The U.S. Department of the Interior is hereby authorized to operate the Unmanned Aircraft System in the National Airspace System.