OPERATING PROCEDURE NO. 10

Unmanned Aircraft System Operational Guidelines

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Approved by:

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1.0 INTRODUCTION

1.1 Purpose

The increasing availability of low-cost small unmanned aircraft systems ("UAS") technology allied with image processing applications, real-time video and various sensor payloads, offers a unique opportunity to use these capabilities in search and rescue activities, all while reducing proximity, exposure and risk for volunteers, first responders and the public.

Washington State Animal Response Team (WASART) has formed an unmanned aircraft unit:
1. To reduce risk and liability of WASART volunteers and make better use of available resources.
2. Comprised of members belonging to WASART
3. Whose members have the qualifications and training detailed in this document
4. To assist the governing Law Enforcement agency, through the WASART Coordinator, in rescue related activities

All operations will be conducted under FAA part 107 flight authority with approval/authorization by the Emergency Management Division for the mission.

1.2 Privacy

In light of the diverse potential uses of UAS in the National Airspace System, expected advancements in UAS technologies, and the anticipated increase in UAS use in the future, WASART shall make reasonable efforts to ensure that its privacy policies relative to UAS use are periodically updated to keep pace with these developments.

WASART shall not use a UAS intentionally for the purpose of viewing, recording or transmitting images and/or video upon any property at which a person has a reasonable expectation of privacy unless:
a. Consent by the owner or person responsible for the property is obtained; or
b. A direct request was made by the governing Law Enforcement Agency; or
c. Exigent circumstances exist, to include active public safety emergency, fire, and search and rescue operations.

2.0 ACRONYMS AND DEFINITIONS

2.1 Acronyms and Abbreviations

AC: Advisory Circular

AGL: Above Ground Level

ATC: Air Traffic Control

BVLOS: Beyond Visual Line of Sight

CFR: Code of Federal Regulations

COA: Certificate of Authorization

CRM: Crew Resource Management

CS: Control Station

DEM: Department of Emergency Management

DROTAM: Drone NOTAM (drone Notice to Airmen)

FAA: Federal Aviation Administration

FPV: First Person View

GPS: Global Positioning System

KCSO: King County Sheriff's Office

LAANC: Low Altitude Authorization and Notification Capability

LZ: Landing Zone

NAA: National Aviation Authority

NAS: National Airspace System

NOTAM: Notice to Airmen

NTSB: National Transportation Safety Board

OPAREA: Operating Area

PAO: Public Aircraft Operations

PIC: Pilot in Command

SCSO: Snohomish County Sheriff's Office

SGI: Special Government Interest

SMS: Safety Management System

SOCS: Security Operations Centers

STL: Strike Team Lead

TBVLOS: Tactical beyond visual line of sight

TRACON: Terminal Radar Approach Control Facility

UAS: Unmanned Aircraft System (see Definitions)

UA: Unmanned Aircraft (see Definitions)

UTM: Unmanned Air Traffic Management System

VLOS: Visual Line of Sight

VO: Visual Observer

WASART: Washington State Animal Response Team

2.2 Definitions

14 CFR Part 107 (Part 107): Federal Aviation Administration Small Unmanned Aircraft Systems regulations.

Certificate of Authorization (COA): An authorization issued by the Air Traffic Organization of the Federal Aviation Administration to a public operator for a specific unmanned aircraft activity.

Public Aircraft Operation (PAO): An approved contracted flight and/or service performed by WASART on behalf of a requesting agency, such as King County or Snohomish County Sheriff's Offices. These services are NOT remunerated in any way and the FAA has been advised of the contract.

Civil Twilight: The time periods between approximately 30 minutes before sunrise until sunrise, and between sunset and approximately 30 minutes after sunset.

Controlled Airspace: A generic term that covers the different classifications of airspace (Class A, B, C, D, G and E airspace) and defined dimensions within which ATC services are provided.

Crew Resource Management (CRM): A process designed to aid in the prevention of aviation accidents and incidents by improving performance through an understanding of human factor concepts, which focuses on interpersonal communication, leadership and decision making by the flight crew.

First Person View (FPV): A method used to control a radio-controlled aircraft from the pilot's viewpoint via an onboard camera, fed wirelessly to video goggles or a video monitor.

Night: The time between the end of evening civil twilight and the beginning of morning civil twilight, as published in the American Air Almanac, converted to local time.

Nonparticipant: Any person not associated with the greater UA flight mission, including the public, spectators and/or media.

Pilot in Command(PIC): A PIC is a team member who has final authority and responsibility for the operation and safety of a flight, has been designated as PIC before or during the flight, and holds the appropriate category, class, training, type rating and currency, if appropriate, for the conduct of the flight.

Responsible Person: Drone operator

Unmanned Aircraft (UA): An unmanned aircraft weighing less than 55 pounds, including everything that is onboard or otherwise attached to the aircraft, that can be flown without the possibility of direct human intervention from within or on the aircraft.

Unmanned Aircraft System (UAS): A small UA and its associated elements (including communication links and the components that control the small UA) that are required for the safe and efficient operation of the small UA in the NAS.

Vision Aides: Binoculars, night vision devices, etc., used only for augmentation of visual observation duties.

Visual Flight Rules (VFR): VFR are a set of regulations under which a pilot operates an aircraft in weather conditions generally clear enough to allow the pilot to see where the aircraft is going and any other aircraft in the vicinity. For WASART UAS Team purposes, VFR requires a 3 statute mile visibility with operations conducted at least 500 feet below any clouds.

Visual Line of Sight (VLOS): At all times the UA must remain close enough to the PIC, or the person manipulating the flight controls, to be capable of seeing the aircraft with vision unaided by any device other than corrective lenses.

3.0 ORGANIZATION

3.1 Overview

WASART's flight unit is comprised of Pilots, Visual Observers, and other crew members who assist in safe operation and maintenance of the UAS capabilities.

WASART flight unit members may be requested for WASART missions by the WASART Coordinator, pursuant to agreements and terms in place with flight authority under Part 107.

WASART is responsible for the selection and training of WASART flight unit members.

3.2 Pilot in Command (PIC)

A PIC is a team member who has final authority and responsibility for the operation and safety of a flight, has been designated as PIC before or during the flight, and holds the appropriate category, class, training, type rating and currency, if appropriate, for the conduct of the flight.

The responsibility and authority of a PIC as described by 14 CFR § 91.3, Responsibility and Authority of the Pilot-in-Command, apply to the PIC in any mission.

The PIC has responsibility for all other crew members participating in that mission/flight. The PIC is responsible for their briefing and for their actions during the mission.

The PIC reports to the Strike Team Lead.

The PIC position may rotate duties as necessary with equally or more qualified pilots. The crew member designated as PIC may change during flight, provided that a certified PIC must be designated at all times.

The PIC can only fly one mission, with one aircraft, at a given time.

There can be more than one PIC operating within a given mission, when a number of aircraft are in use.

3.3 PIC Qualifications

The minimum training and certification requirements for a PIC are as follows:

a. Hold a current Remote Pilot Airman Certificate with a UAS rating issued by the FAA Part 107 or hold a part 61 pilot certificate, completed a flight review within the previous 24 months, and completed the UAS online training course required by the FAA;
b. Pass a recurrent aeronautical knowledge test within 24 calendar-months of passing either an initial or other recurrent aeronautical knowledge test, as required by FAA Part 107;
c. Have a pilot's license on their person;
d. Complete training as designated by WASART for the safe flight of all UAS to be operated;
e. Be 16 years of age or older;
f. Be vetted by the Transportation Security Administration;
g. Be a member in good standing of WASART;
h. Hold a valid driver's license;
i. Be approved by the WASART Call Coordinator;
j. For any unit UAS leadership role, the course "FEMA UAS in Disaster Management (AWR 345)" is recommended.

At a minimum, the PIC must have conducted three takeoffs (launch) and three landings (recovery) with the specific UAS aircraft type to be used and a similar mission profile, within the previous 90 days prior to flying an operational mission.

3.4 Visual Observer (VO)

A Visual Observer is a trained crew member acting as a flight crew member who assists the PIC and any person manipulating the flight controls, to see and avoid other air traffic or objects, or obstacles, aloft or on the ground. There may be multiple VOs involved in a flight and/or mission. A VO can be physically in a different location within the flight path. The VOs are the responsibility of the PIC and must be in direct privileged communication.

3.5 Other Crew Members

Other crew members include any other team members who assist in the safe operation of the UAS services, including managing the operations area, working on equipment, managing a unit vehicle, and/or providing perimeter security.

3.6 Crew Member Qualifications

The minimum training and certification requirements for a VO or other crew member are as follows:

a. Complete the WASART crew training
b. Hold a valid driver's license
c. Be a member in good standing of WASART

3.7 Restrictions

No person may serve as a PIC, person manipulating the controls, VO, or other crew member if he or she:

a. Has consumed any alcoholic beverage within the preceding 8 hours;
b. Is under the influence of alcohol;
c. Has a blood alcohol concentration of 0.04 percent or greater; and/or
d. Is using a drug, whether prescription, over the counter, recreational, or illegal, that affects the person's ability to safely operate the aircraft and/or participate in the UAS operational mission.

It is the responsibility of the PIC, the person manipulating the controls, VO, or other crew member to determine whether he/she is unable to participate in a UAS operation. He or she shall notify the STL immediately and cease participation if, at any time, he or she feels unfit.

No PIC, VO, or crew member may participate in UAS activities that exceed 8 single operation hours in a 24-hour period.

4.0 AIRSPACE AUTHORITY

4.1 Authority Identification

As a non-governmental entity, WASART operates under the Small UAS Rule, 14 CFR Part 107, and conducts flights as a public aircraft operation under the KCSO/SCSO granted COA, as long as a specific flight authority has been designated for each flight and the proper documentation is available for review.

The PIC will determine the appropriate airspace authority for each flight operation based on the type of airspace, type of mission, risk factors, time of day and any other pertinent circumstances. A decision tree is provided in this document.

A training or demonstration flight would normally be conducted under Part 107, unless a training DEM number has been issued, in which case the COA can be used.

By default, a DEM sanctioned mission, which is a public safety type activity, should be conducted under the KCSO/SCSO COA and inherit existing KCSO/SCSO public authority and Waivers, as well as pilot currency.

The PIC, VO and crew members will be briefed on and follow the FAA rules for the chosen airspace authority, including any approved waivers, for each operation.

When necessary, the PIC will notify appropriate ATC, TRACON, LAANC and /or other agencies based on the parameters established by the waiver granted by the FAA. A list of airspace coordination and notification contacts is appended to this document.

4.2 Controlled Airspace

Operations in Class B, Class C, or Class D airspace, or within the lateral boundaries of the surface Class E airspace designated for an airport of any kind, are not allowed unless a request has been properly made ahead of time and prior authorization is received in COA parameters, from ATC and/or LAANC and/or SGI.

When operating in controlled airspace, the PIC must be aware of all traffic patterns and approach corridors to runways and landing areas.

The PIC must avoid operating anywhere that the presence of the UAS may interfere with the operations at an airport, such as approach corridors, taxiways, runways, or helipads without explicit prior approval from the airport control tower.

The PIC must yield right-of-way to all other aircraft, including aircraft operating on the surface of the airport.

At any time during flight operations, the PIC must be in possession of his/her Part 107 pilot’s license, required logbooks, any pertinent COA certificates, and make them available to the proper authorities upon request.

4.3 Data Reporting

Documentation of all operations associated with UAS activities is required regardless of the airspace in which the UAS operates.

All operational UAS activities must be reported to the FAA when requested with the following information submitted:
a. PIC FAA license number;
b. Aircraft FAA registration;
c. PAO Entity;
d. The number of flights conducted under each flight authority;
e. Aircraft operational hours per flight;
f. Ground control station operational hours in support of each flight;
g. Pilot duty time per flight;
h. Equipment malfunctions (hardware/software) affecting either the aircraft or ground control station;
i. Deviations from ATC instructions and/or Letters of Agreement/Procedures;
j. Operational/coordination issues;
k. The number and duration of lost link events per aircraft per flight.

5.0 AIRCRAFT

5.1 Overview

Currently all aircraft used for WASART missions are personally owned by a member. However, each aircraft must conform to certain standards based on FAA Part 21 guidance:
a. The UAS must have Remote ID capabilities, either by being built in to the aircraft or by an attached module.
b. The UAS is currently registered with the FAA and has the registration number displayed on the outside of the aircraft
c. The UAS is in good working order and the regular maintenance schedule is followed by the owner as determined by the manufacturer.
d. The UAS has an anti-collision light visible for 3 statute miles for twilight and nighttime flights.

5.2 Inspections

Before each flight, the PIC must inspect the UAS to ensure that it is in a condition for safe operation, as specified in FAA Part 107.49, “Preflight familiarization, inspection, and actions for aircraft operation”.

The preflight assessment must include:
a. Weather conditions at the scene(s);
b. Authorization to fly by the DEM;
c. Knowledge of local airspace and any flight restrictions and that any necessary waiver(s) have been obtained;
d. The location of persons and property on the surface;
e. Knowledge of other ground hazards.
f. Persons directly participating in the UAS operation have been briefed about the operating conditions, emergency procedures, contingency procedures, roles and responsibilities, and potential hazards.

A preflight visual and/or functional inspection of the aircraft and remote must be conducted; see Appendix D for quick checklists. The inspection must include:
a.Airframe structure, all flight control surfaces, and linkages;
b.Registration markings, for proper display and legibility and legal navigation lights;
c.Moveable control surface(s), including airframe attachment point(s);
d.Servo motor(s), including attachment point(s);
e.Propulsion system, including power plant(s), propeller(s), motor(s), etc.;
f.Verifying all systems (e.g., aircraft and control unit) have an adequate energy supply for the intended operation and are functioning properly;
g. Avionics, including control link transceiver, communication/navigation equipment, and antenna(s);
h. Compass and IMU status and calibrate if necessary;
i. Control link transceiver, communication/navigation data link transceiver, video receiver and antenna(s);
j. Display panel, if used, is functioning properly;
k. Checking ground support equipment, including takeoff and landing systems, for proper operation;
l. Checking that control link correct functionality is established between the aircraft and the flight controller, also known as the Control Station (CS);
m. Checking for correct movement of control surfaces using the CS;
n. Checking onboard navigation and communication data links;
o. Checking flight termination or home point, if required;
p. Checking battery levels for the aircraft and CS and ensure enough power for mission;
q.Checking that any equipment, such as a camera, is securely attached and operating properly;
r. Verifying communications with UAS and that the UAS has acquired GPS location from at least 8 satellites;
s. Starting the UAS propellers to inspect for any imbalance or irregular operation;

t. Verifying all controller operation for heading and altitude;
u. Checking object avoidance sensors, if applicable;
v. Ensuring that any object attached or carried does not adversely affect the flight characteristics or controllability of the aircraft;
w. If required by flight path walk through, verifying any noted obstructions that may interfere with the UAS; andl;
x. At a controlled altitude, flying within range of any interference and recheck all controls and stability.

5.3 Maintenance

Maintenance currently is the responsibility of the aircraft owner. By participating in missions with their aircraft, the member/owner certifies that he or she is current on maintenance of the aircraft.

Perimeter - The perimeter of flight operations needs to be clearly marked using cones, or caution tape, or a combination of both.

Setup - For equipment setup an area will be designated for spare batteries, controllers, radios, and other flight equipment that will remain undisturbed by unauthorized persons.

Shelter - It is recommended to store equipment sheltered from rain and sun.

Power - While charging from a vehicle is acceptable, there are many advantages to having a power hookup or a power unit providing a clean 110v supply. Alternatively, power can be drawn from a command vehicle.

Communications - The PIC and/or the crew members in charge of communications need to have constant communications with the STL, with other crew members (such as visual observers) and with potential aircraft operating in the area.

Safety – The PIC is the default safety officer of the UAS operation. When multiple PICs are operating in the same mission, the STL will assign this responsibility. At all times, the flight operations area needs to have the following:
a. Appropriate cold fire extinguisher for lithium batteries in working order;
b. WASART required PPE (helmet and eye protection). Ear protection is not recommended due to the necessity of verbal communication necessary.

5.5 Storage

Storage and transport currently are the responsibility of the aircraft owner.

When not in use the aircraft and all other equipment should be stored in protective cases to protect the equipment from damage that would render it unusable.

Lithium batteries must be stored per manufacturer recommendations and charged properly by the owner

6.0 UAS FLIGHT OPERATIONS

6.1 Coordination Requirements

Operations in uncontrolled (Class G) airspace may be conducted without ATC permission, within FAA rules and regulations and under Part 107 parameters. It is good practice to submit a DROTAM using LAANC, or any other system, as a courtesy to other pilots.

In controlled airspace, the operational details must be coordinated, including NOTAM information for which Operational Area(s) will be used that day, UAS PIC name, and a cell/land telephone number to call in the event of an emergency, with Seattle TRACON notified at 206-214-4600 no later than 2 hours prior to the start of UAS operations.

In controlled airspace, after authorization has been received, the PIC will notify Seattle TRACON or appropriate ATC within 15 minutes of the end of UAS operations. This is required even if flying below 200ft AGL.

6.2 Notice to Airmen (NOTAM)

A distant (D) NOTAM should be issued whenever flight operations are scheduled or required by a Part 107 waiver.
A NOTAM may be accomplished 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 48 hours prior to the operation, unless otherwise authorized as a special provision. The issuing agency will require the:
1. Name and address of the pilot/agency filing the NOTAM request;
2.Location, altitude, or operating area;
3.Time and nature of the activity;
4.Expected end time.

If connected via Internet, it is allowed to request a NOTAM and/or send location, via one of the software packages, such as 1800wxbrief.

6.3 Operational Limitations

Unless otherwise approved by a waiver, the UAS must remain within VLOS of the PIC and/or the person manipulating the controls. Alternatively, the UAS must also remain within VLOS of the visual observer(s), who is in constant direct communication with the PIC. This is without aid of any device other than corrective lenses.

The UAS may not operate over any person not directly participating (nonparticipants) in the operation, not under a covered structure, or not inside a covered stationary vehicle, unless such operation is being conducted due to exigency as defined under applicable law.

FPV cameras cannot satisfy "see-and-avoid" requirements but can be used as long as the requirement is satisfied in other ways.

Unless otherwise approved by a waiver, operations must occur at a maximum altitude of 400 feet AGL or 400 ft. above the nearest (400ft.) obstruction or structure.

Operation of UAS in a BVLOS (beyond visual line of sight) mode, even with FAA waiver, can only be approved by the KCSO/SCSO, WASART, in extraordinary circumstances (such as an emergency) requiring such mode of operation.

Operation of UAS in TBVLOS (tactical beyond visual line of sight) or EVLOS (extended visual line of sight), can be executed in extraordinary circumstances (such as an emergency) requiring such mode of operation and under defined FAA limitations for such type of flight.

If the UAS is used at all in BVLOS, TBVLOS or EVLOS mode, planned or because of a sudden emergency, it should be logged and reported by the STL or PIC as part of the FAA recurring reporting.

6.4 Safety of Flight

All WASART crew members are responsible for halting or canceling UAS activity if, at any time, the safety of persons or property on the ground or in the air may be jeopardized.

Any VO responsible for performing see-and-avoid requirements for the UAS must have and maintain continuous communication with the PIC. If by radio, an exclusive and dedicated frequency must be used for that purpose.

The use of multiple successive VOs (daisy chaining) is not recommended unless otherwise authorized by special EVLOS provision, in which case, all VOs and PIC should be on the same exclusive and dedicated frequency.

At no point should WASART members, media, or other people operate their own UASs for recreational or commercial purposes in the mission area without an explicit authorization from the STL.

6.5 Prior to Flight

The PIC must conduct an assessment of the operating environment. The safety risk assessment must include the following:
a.Local weather conditions (B4UFLY),
b.Local airspace and any flight restrictions (SKYVECTOR),
c.The location of persons and property on the surface, and
d.Safety of the planned flight operations location,
e.Other ground hazards,
f.Availability of proper equipment and its condition,
g.Availability of trained crew members and resources.

The PIC must conduct a pre-takeoff briefing with all crew members, as applicable, prior to each launch. The briefing should include, but is not limited to, the:
a.Contents of any applicable Part 107 waiver and flight authority,
b.Altitudes and path to be flown,
c.Mission overview including handoff procedures,
d.Frequencies to be used and communications protocol,
e.Flight time, including reserve requirements,
f.Contingency procedures to include lost link, divert, and flight termination,
g.Emergency procedures, alternative landing, dump site, chase vehicle, etc.
h. Roles and responsibilities of each person involved in the operation, and
i. Hazards unique to the flight being flown.

The PIC or a member of the flight crew must also conduct a briefing for all other public safety personnel involved in the current mission. At a minimum inform them over the WASART mission frequency of UAS being used in the vicinity, provide short instructions of what not to do, and possibly recommend wearing personal protection equipment.

The PIC must ensure there is sufficient power for the UAS to continue planned controlled flight operations to a normal landing.

The PIC must ensure all necessary documentation is available for on-site inspection, including the PIC's remote pilot certificate, aircraft registration (if required), and any waiver documentation (if applicable).

Prior to flight, the PIC is responsible for conducting a check of the UA to verify it is actually in a condition for safe operation (§ 107.15). Guidance regarding how to determine that a UA is in a condition for safe operation is found in CFR107, Chapter 7, “Small Unmanned Aircraft Maintenance and Inspection”.

6.6 Sterile Cockpit Procedures

The WASART STL for the actual mission involving a UAS, should designate and make available a sterile environment for critical phases of flight operations. Critical phases of flight include all ground operations involving:

a. Take-off and landing (launch or recovery);
b. All other flight operations in which safety or mission accomplishment might be compromised by distractions.

No crew member may perform any other duties during a critical phase of flight not required for the safe operation of the aircraft.

No crew member may engage in, nor may any PIC permit, any activity during a critical phase of flight which could:

a.Distract any crewmember from the performance of his/her duties; or
b.Interfere in any way with the proper conduct of those duties.

The pilot and/or the PIC must not engage in any activity not directly related to the operations of the aircraft.

The use of cell phones or other electronic devices by crew members is restricted to communications pertinent to the operational control of the UAS and any required communications with ATC.

6.7 Night Operations

Night is defined as the time between the end of evening civil twilight and the beginning of morning civil twilight, as published in The Air Almanac, converted to local time. In the continental United States, evening civil twilight is the period of sunset until 30 minutes after sunset and morning civil twilight is the period of 30 minutes prior to sunrise until sunrise.

Small UAS operations at night may occur only under the two risk mitigation measures listed in § 107.29:

1. The remote PIC must have completed either an initial knowledge test (tests taken after April 2021) or recurrent training that has been updated to include night operations under FAA AC 107-2.
2. The small unmanned aircraft must have lighted anti-collision lighting that is visible for at least 3 statute miles. The remote pilot may rely upon manufacturer statements indicating the anti-collision lighting is visible for 3 statute miles. However, the remote pilot ultimately remains responsible for verifying that anti-collision lighting is operational, visible for 3 statute miles, and has a flash rate sufficient to avoid a collision at the operating location.

As is the case for civil twilight operations, the UA must be equipped with anti-collision lighting that is visible for at least 3 statute miles. However, the remote PIC may reduce the intensity of the light if the remote PIC determines it is in the interest of safety to do so.

VOs will be positioned in appropriate locations during all UAS flight operations.

Vision aides may not be used as the primary means for visual observation duties but are permitted to augment the VOs visual capability.

Any UAS flown during civil twilight must be equipped with a light emitting diode (LED) position light (strobe) installed to comply with 14 CFR §91.209 unless otherwise approved by special provision.

The area of operation must be sufficiently illuminated to allow both the remote PIC and VO to identify people or obstacles on the ground, or a daytime site assessment must be performed prior to conducting operations noting any hazards or obstructions

It is recommended that the area of operations is equipped with red lights, so the crew will not lose night vision, and white lights are not shown into the area.

6.8 Visual Observers

Visual Observers will be trained and receive a safety briefing that addresses the mission intent, safety barriers, non-interference with any mission personnel, and emergency procedures in the event of an incident or accident.

Visual Observers will be directed to and contained within a specific observation point that ensures risk of injury is minimized and assures non-interference with the UAS training mission.

Crew Members will ensure that Visual Observers do not engage in conversations, discussions, interviews or distractions of any mission personnel from the performance of his/her duties or interfere in any way with the proper conduct of those duties.

WASART will limit the number of Visual Observers to that which can be adequately monitored and protected by the personnel resources onsite.

At least one Visual Observer for BVLOS operations must be an FAA licensed Part 107 pilot.

6.9 BVLOS Operations

BVLOS Operations can only be carried out if and when a waiver to FAA 14-107.31 has been granted, and under the conditions set forth in the waiver document.

Definition – A waiver to 14 CFR § 107.31, allows the remote pilot in command (PIC) to operate the UA with first person view (FPV), in lieu of visual line of sight, while a second remote pilot and Visual Observer (107 VO) exercise the ability to see the UA throughout the entire flight.

These are the conditions set forth by the FAA to conduct operations beyond visual line of sight.

The responsible person(s) named on the waiver MUST be physically present during BVLOS operations. That person personally answers to the FAA and is the responsible authority in their view. A list of these responsibilities is listed below.

§ 107.31 Visual Line of Sight Operations Special Provisions. UAS operations will be conducted with the remote pilot in command using FPV, in lieu of visual line of sight.

BVLOS operations will be conducted in Class G airspace only, unless specific airspace authorization or waiver is received from the FAA in accordance with § 107.41; The airspace Certificate of Waiver or Authorization to operate BVLOS has to be requested separately;

All operations under BVLOS conditions will use one or more VO; at least one VO has to be a Part 107 certified airman;

Communication between the remote PIC, VO(s), and the onsite Part 107 certificated airman (acting as VO) will allow for the remote PIC to maneuver the UA with sufficient time to perform necessary maneuvers to avoid other aircraft in accordance with § 107.37, or react to any unforeseen operational or mechanical failure;

At all times, at least one person who holds a remote certificate under Part 107, will maintain VLOS of the UA in order to:
a. know the UA's location
b. determine the UA's attitude, altitude, and direction of flight
c. observe the airspace for other air traffic or hazards
d. determine that the UAS does not endanger the life or property of another

The remote pilot who is responsible for maintaining VLOS of the aircraft involved in the operations, will maintain effective communication with the remote PIC who is manipulating the flight controls of the UA and coordinate with the remote PIC to avoid all potential collision hazards and maintain awareness of the position of the UA throughout the entire operation;

Prior to and during BVLOS operations, the "independent command and control" feature of the UA will be verified and must show proper operation;

Prior to conducting operations that are BVLOS, the remote PIC and the second remote pilot will maintain continuous "In-Person" voice communication;

Prior to conducting operations, the remote PIC will establish continuous full-duplex hands-free audio communications with the VO. The full-duplex audio communications will occur over an independent transmission and reception system, and will not be dependent on the ground station method of data transmission and reception. A secondary mode of communication will be on hand, for cases where primary communications might not be sufficient;

The remote PIC will fulfill the requirements of § 107.15(a) for all components of the UAS.

Prior to operations, all persons who will act as remote PIC, participate in the operation as a Part 107 certificated airman, or act as a VO in furtherance of the operation, must participate in a safety briefing that addresses at minimum, the following items:
a.Designated positions and responsibilities/Crew Resource Management
b.Flight operating area
c.Designated launch and recovery area
d.Verification of geo-fence boundaries
e.Normal procedures
f.Abnormal procedures
g.Primary and secondary communications systems
h.Emergency procedures

The remote PIC and the remote pilot who fulfills the duties of a VO will have access to a real-time display of UA altitude, UA position, and UA direction of flight information. This information will be available at all times to the remote PIC and the remote pilot who is acting as the VO;

Operations conducted in BVLOS will not exceed 25 knots (28 miles per hour) groundspeed;

The Responsible Person listed on this Waiver will ensure each remote PIC is trained in a manner consistent with how the UA will be operated under BVLOS.

All training and demonstration for any remote PIC and VO will be documented and made available upon request by the Administrator or an authorized representative. Training operations may only be conducted under the standard requirements of Part 107 (VLOS). The training will include:
a.UA limitations
b.UA programming
c.UA operational procedures
d. Abnormal and contingency procedures
e. Evasive and emergency procedures
f. Crew Resource Management
g. UA flight training
h. A demonstration of UA ground and flight skills

Operations conducted under BVLOS conditions will cease immediately if, at any time:
a. Safety of human beings or property on the ground or in the air is in jeopardy
b. There is a failure to comply with the granted and documented provisions
c. Full-duplex communications cannot be maintained
d. There is a loss of UA onsite control link;
e. There is a failure of UA offsite ground control station communication link

f. A non-participating vehicle, aircraft, or person enters the restricted area
g. There is a loss of UA GPS signal
h. There is degraded UA GPS location information
i. The PIC cannot maintain safe flight operations for any other reason

Each UA will have pre-programmed and available contingency and emergency profiles. The UA ground station displays will have the ability to audibly and visually alert all remote pilots involved in the operation of any degradation in the UA that may cause it to not comply with any requirement related to BVLOS operations, or with any provision of Part 107.

Prior to BVLOS operations, the Responsible Person will develop and ensure that the developed operations manual that the responsible person will provide to the Administrator with the BVLOS waiver application is made available to the Administrator. As will be described in the Waiver application, the Responsible Person will ensure all operations conducted under a BVLOS Waiver will follow the procedures as outlined in the operations manual. If a discrepancy exists between the BVLOS waiver provisions in this and the procedures outlined in the operations manual, the provisions of the BVLOS Waiver take precedence and must be followed.

The operations manual developed by the Responsible Person will contain at least the following items:
a.Operator name, address, and telephone number
b.Method of distribution and revision
c.Certificate of Waiver. The operations manual will include a copy of any current Waiver(s)
d.Aircraft description and limitations list by aircraft type and model
e.Method to ensure safety of non-participating persons and aircraft
f.Safety briefing of Direct Participants
g.Direct Participants Minimum Requirements. In accordance with any applicable Waiver, the Responsible Person must specify the minimum requirements for all Direct Participants in the operations manual, and the method used by the Direct Participants to meet those minimum requirements
h. Method of communications
i. Normal operating procedures
j. Abnormal operating procedures
k. Emergency procedures
l. Crew Resource Management
m. Risk management
n. Accident Notification. The operations manual must contain procedures for notification and reporting of accidents in accordance with a BVLOS Waiver;
The Responsible Person will ensure that a copy of the current operations manual, including any copy of any Waiver, will be available to all remote PIC’s involved with the operation, during UAS operations that are the subject of any Waiver;

The Responsible Person may update or revise the operations manual. The Responsible Person will ensure tracking of manual revisions, all manuals used or referenced for operations conducted under any Waiver are updated, and revised manuals are re-submitted to the Administrator. If the Responsible Person or Administrator determines that any update or revision would affect the ability to comply with any provision of any Waiver, or the basis for which the FAA granted any Waiver, then the Responsible Person must apply for an amendment to this Waiver;

The Responsible Person will maintain each UAS and its components in accordance with manufacturer's instructions and recommendations, as provided with the BVLOS waiver application. UA maintenance includes scheduled and unscheduled overhaul, repair, inspection, modification, replacement, and system software upgrades of the UAS and its components necessary for flight. A log of all maintenance performed must be kept for each aircraft operated under a BVLOS waiver, and available to the remote PIC to review prior to conducting operations that are the subject of a BVLOS waiver. Each UAS maintenance log must be presented to the Administrator when requested.

Any UAS that has undergone maintenance will undergo a functional test flight prior to conducting operations under any Waiver. A log entry must be made for each functional test flight. The log entry must contain at minimum the:
a. Calendar date
b. UA registration number
c. Remote PIC who performed the functional test flight
d. Duration of the flight
e. the result of the functional flight test;

The Responsible Person must establish and maintain a Safety Management System (SMS) appropriate for the size, scope, and complexity of any waivered operation, in accordance with the guidance on establishing and maintaining an SMS that is currently available in FAA Advisory Circular 120-92B. This program must be made available upon request by the Administrator.

Flight operations recordkeeping requirements. Records shall be retained for a period of 90 days after the expiration date of any Waiver. The Responsible Person shall keep at its principal business office or at other places approved by the Administrator, and provide the Administrator on a monthly basis by email to 9-AFS-820-Part107Reports@faa.gov, the following:
a. For each UA flight conducted under the terms of a BVLOS waiver:
    iRegistration number of the UA
    ii. Make and model of the UA
    iii. Name and certificate number of the remote PIC
    iv. Name and certificate number of the onsite Part 107 certificated VO
    v. Location of the remote PIC during the UA flight
    vi. Location of the UA
    vii. Duration of the UA operation

b.UA equipment malfunctions. Reportable UA equipment malfunctions include, but are not limited to, the following:

i. Onboard flight control system
ii. Any portion of the navigation system to include GPS functionality,
iii. Power plant malfunction or failure
iv. Battery malfunction or failure
v. Electrical power system malfunction or failure
vi. Control station malfunction or failure
vii. Broken connection

6.10 TBVLOS Operations

***WASART will not fly TBVLOS**

TBVLOS - FAA definition and guidance:

I.The UAS **must remain within 1,500 feet of the PIC.**
II.BVLOS is only to be used in extreme emergency situations to safeguard human life.
III.You must apply for this TBVLOS waiver by email before you fly.
IV.You cannot fly TBVLOS until your signed waiver approval is received.
V.**You can only be a COA agency to receive a TBVLOS waiver.**
VI.**TBVLOS flights must be flown under COA authority – not 107.**

6.11 Flight Permission Process – Emergency Situations

First responders and other organizations responding to natural disasters or other emergency situations may be eligible for expedited approval through the FAA Special Governmental Interest (SGI) process.

Operations that may be considered include:

a. Firefighting
b. Search and Rescue
c. Law Enforcement
d. Utility or Other Critical Infrastructure Restoration
e. Incident Awareness and Analysis
f. Damage Assessments Supporting Disaster Recovery Related Insurance Claims
g. Media Coverage Providing Crucial Information to the Public

To apply for a waiver through the SGI process the requester must be an existing Part 107 Remote Pilot with a current certificate. To submit a waiver through this process, fill out the Emergency Operation Request Form (Appendix 3) and send to the FAA's System Operations Support Center (SOSC) at 9-ator-hq-sosc@faa.gov. If approved, the FAA will add an amendment to your Remote Pilot Certificate that authorizes you to fly under certain conditions for the specified operation. If denied, operators should NOT fly outside the provisions of their part 107. Operators have the option to amend their requests.

This process is called the Special Government Interest (SGI) amendment process and is outlined in FAA Order JO 7200.23A.

7.0 EMERGENCY/CONTINGENCY PROCEDURES

7.1 Additional to Manufacturer's Manual

Emergency procedures in the manufacturer's operations manual shall be followed for all UAS operations.

1. **Loss of UA Flight Control** (**Lost Link**) – The UAS lost link procedures shall be set for 15 seconds to the rally point response which shall automatically cause the UAS to climb to its programmed ceiling altitude and return to and land at the launch site. If positive control of the UAS cannot be maintained and the UAS is leaving the operational area or the UAS poses a risk to life and/or property, the PIC will attempt an engine kill command.
2. **Loss of Visual Contact** – If visual contact with the UAS is lost, the PIC shall command the aircraft into a hover mode and the observer shall try to re-establish visual contact. If visual contact cannot be re-established within a reasonable amount of time (determined by the PIC) then lost link procedures shall be executed.
3. **Loss of GPS Signal** – Should the UAS lose GPS signal during operations, the PIC must immediately command the UAS into manual mode and land as soon as practical. If positive control of the UAS cannot be maintained and the UAS is leaving the operational area or the UAS poses a risk to life and/or property, the PIC will issue an engine kill command.
4. **Loss of UA power** (engine failure) – In the case of failure or crash, the UAS team members will immediately attempt to locate the UAS, assess the scene for injuries (render first aid as necessary) and photograph it. A crash report including proper notification must be completed as soon as possible and within mandated FAA rules.
5. **UA Collision** - In the case where the UA collides with an object, such as a structure, a tree, a cable, a flying object or animal, etc. the pilot should immediately assess if the aircraft is flyable. If the aircraft can be safely flown to the landing point, a return to home procedure should be initiated. If the UA is not 100% flyable, a landing procedure should be initiated, followed by a dump procedure if that fails. In any case, the flight will not be resumed until the UA has been fully inspected for damage and the PIC has assessed its airworthiness and found it to be satisfactory per this document.
6. **Flyaway procedure** - In the case the UA has lost link and is not controlled by the PIC, but is still in motion, the crew should do the following:
    a. Declare an emergency and notify STL, Incident Commander, WASART and governing Law Enforcement agency.
    b. Try to reacquire the link or spatial data from the aircraft and initiate a return to home procedure.
    c. Assess altitude, velocity, and direction of runaway flight (or use spatial data) and initiate a chase vehicle procedure.
    d. If a flight path is in controlled airspace (with prior permission) or is evolving towards controlled airspace, the PIC should immediately notify appropriate authority for the space and provide necessary data.

e. Assess direction and range and have governing Law Enforcement agency notify any local jurisdiction within reach of the flight path.
f. Report event and outcome to the FAA.

8.0 INCIDENT/ACCIDENT/MISHAP REPORTING

8.1 FAA Reporting Criteria

All accidents/mishaps involving UAS operations, where any of the following occur, shall be reported to the FAA:

a. Fatal injury, where the operation of a UAS results in a death occurring within 10 days of the accident/mishap;
b. Serious injury, where the operation of a UAS results in a hospitalization of more than 48 hours, the fracture of any bone (except for simple fractures of fingers, toes, or nose), severe hemorrhage or tissue damage, internal injuries, or second or third degree burns;
c. Any loss of consciousness;
d. Damage to property, other than the unmanned aircraft, if the cost is greater than $500.00 to repair or replace the property (whichever is lower).

All incidents or accidents are required to be reported to the FAA within 10 days, unless such incident or accident occurs while operating under a COA, which must be reported as soon as reasonably practicable and before any additional flights occur.

8.2 FAA Report Submission

Any incident or accident that occurs while operating under Part 107 can be reported to the FAA via FAA Drone Zone at https://faadronezone-access.faa.gov/.

All other incident/accident reports may be submitted to the FAA Regional Operations Center by phone at 425-227-1999 or electronically at http://www.faa.gov/about/office org/field offices/fsdo/.

The report should include the following information:

a. UAS PIC's name and contact information;
b. UAS PIC's FAA airman certificate number;
c. UAS registration number issued to the aircraft, if required;
d. Location of the accident;
e. Date of the accident;
f. Person(s) injured and extent of injury, if any or known;
g. Property damaged and extent of damage, if any or known; and
h. Description of what happened.

8.3 NTSB REPORTING CRITERIA

All accidents/mishaps involving UAS operations, where any of the following occur, shall be reported to the NTSB in compliance with 49 CFR §830.2:
a. Any person suffers death or serious injury;
b. Flight control system malfunction or failure such as a fly-away;
c. In-flight fire;
d. Aircraft collision in flight;
e. More than $25,000 damage to objects other than the aircraft;
f. Release of all or a portion of a propeller blade from an aircraft, excluding release caused solely by ground contact.

All incidents or accidents are required to be reported to the NTSB as soon as reasonably practicable and before any additional flights occur.

8.4 NTSB Report Submission

All incident/accident reports may be reported to the NTSB's Response Operations Center at 844-373-9922.

The report should include the following information:
a. Type and registration marks on the UAS;
b. Name of owner and operator of the UAS;
c. Name of the PIC;
d. Date and time of the accident;
e. Location of the operating area; and
f. Nature of the accident, the weather, and the extent of damage to the UAS.

8.5 Law Enforcement Report Submission

All incident/accident/damage must be reported to the STL.

Appropriate OEM forms must be filled and submitted.

9.0 INFORMATION MANAGEMENT

9.1 Collection

All UAS flights will be documented and reported to WASART within 10 days. See WASART UAS Logbook for reference (Appendix 6).

At a minimum, flight records should include:
a. Date and time,
b. Operational area,
c. Flight authority,
d. Name of the PIC,
e. Name of the VO(s),
f. Name of other team members,
g. Aircraft identification,
h. Flight time,
i. Any incidents/accidents/mishaps, including those requiring FAA and/or NTSB reporting, as well as those resulting in any damage to the UAS or additional required maintenance,
j. Purpose of the flight,
k. Mission DEM number, and
l. WASART STL

All UAS flights conducted for any purpose other than training or demonstration shall be documented in a report and either reference or be filed with a DEM number. Training flights should be documented in the flight training documentation and the logbooks for each participating PIC, including training DEM number.

9.2 Retention

WASART may choose, but is not required, to retain any video data collected during a deployment, to be used solely for public relations or training purposes.

Records and data that have been requested and properly transferred to the WASART representative post flight, including images, videos and flight logs, will be erased on the WASART or member equipment after verification of the transferred data integrity. Any media data obtained by a WASART member on their personal UAV during a deployment on which WASART was involved shall be transferred to WASART's media collection as needed, then deleted from the WASART member's personal UAV.

They are to be retained and managed by WASART only and become WASART’s responsibility upon hand over.

9.3 Dissemination

Any data collected by WASART during a deployment shall be further disseminated only with the consent of WASART's Public Information Officer or designee.

Any DEM mission footage used for WASART public relations, or any other form of media publication and social networks, will be obtained from and require explicit permission from the WASART Public Information Officer.

Appendix A – Launch and Recovery Flight Operations

General

1. Prior to takeoff the UAS will be programmed to allow it to safely return to home if the signal is lost from the control station transmitter.
2. When the UAS is deployed to meet an approved mission task, it shall be recovered within the same general area if possible.
3. designated safe area of at least 25 feet shall be maintained during lift off between the UAS and personnel
4. UAS's should not be flown within unsafe distances to any object or person
5. Weather –The PIC shall verify the weather conditions in the immediate area of operations. A local source of weather may be utilized, the internet, phone application or may be observed on site. The UAS will not be flown outside the weather minimums identified by the manufacturer or the approved Certificate of Waiver/Authorization (COA) by the FAA. The PIC shall have final determination of risk due to weather and authority over any mission.
6. Hazards to the public – The PIC shall make every effort to ensure that flight operations will not pose any undue risk to the public not directly involved with the effort. The PIC shall have final determination of risk to the public and authority over any launch of his/her own aircraft. In all cases, the UAS will not be flown over persons that is in violation of the FAA approved COA.
7. Hazards to property – The PIC shall make every effort to ensure that flight operations will not pose any undue risk to any property in the area involved with the effort. The PIC shall have final determination of risk to the property and authority over launch of his/her own aircraft. . In all cases, the UAS will not be flown over property that is in violation of the FAA approved COA.
8. Hazards to personnel – The PIC shall make every effort to ensure that flight operations will not pose any undue risk to the personnel directly involved with the effort. The PIC shall have final determination of risk to the public and authority over any launch of his/her aircraft
9. Proximity to controlled airspace –Operations inside any controlled airspace shall only be performed under approval of the FAA COA or appropriate waiver and after properly documented ATC notification and approval.

Launch and Landing Zones

Launch site selection shall be driven by safety first and foremost. Selection of launch sites will be considered based upon:

1. Ability to maintain adequate buffer zones between aircraft and personnel. The PIC shall maintain a buffer of at least 25 feet for VTOL aircraft between aircraft operations and all non-essential personnel. A designated individual can be identified as a safety officer to ensure the safety of the launch and recovery area.
2. Environmental Assessment - No launches shall occur until all environmental assessments have been considered. The PIC has the final authority to abort any launch based upon hazards to the environment, themselves, or other personnel in the area.

3. The PIC shall select a launch site that ensures UAV departures and flight path are not over populated areas.

Landing Site & Alternate Landing Sites

1. Primary Landing site - Typically the primary landing shall be the same as the launch site. The PIC has final authority for any approaches to the primary site and may wave off any approach deemed unsafe.
2. Alternate landing sites - The PIC shall designate at least one alternate landing site. In the event that the primary landing site is deemed unsafe or compromised, procedures to utilize the secondary site will be invoked.
3. Mission Abort Sites - The PIC may optionally designate an “abort site” whereby the aircraft may be “dumped” in an emergency situation. The abort site shall be so far removed as to provide absolute minimal risk should the aircraft be required to vacate airspace in an emergency. Should the PIC deem it necessary the UA may be flown to this site and inserted without regard to the safety of the aircraft or flight equipment.
4. Landing Safety & Crowd control - All landing sites shall be maintained and operated as the launch sites. Personnel shall maintain a buffer of at least 25 feet for VTOL aircraft between aircraft operations and all non- essential personnel. FAA Guidance suggests maintaining a ‘sterile cockpit’ environment, which means only authorized personnel can be within the defined operations area.

Appendix B – Operational Scenario Considerations

Search

1. Open area
   a. Small area less than 0.25 mile, large area greater than 0.25 mile
   b. Automate multiple grid pattern search if complete image needed
   c. Stills higher res than video for post review
2. Mixed area
   a. Varied terrain and ground cover
   b. Multiple flight crews for best coverage/line of sight
   c. Additional display for second observer could be helpful
3. Wooded area
   a. Small chunks, high vantage point helpful
   b. Slower flight will require extra batteries
   c. Thermal could be helpful depending on conditions, best angle 45
4. Mountain area
   a. Varied terrain and conditions
   b. Multiple flight crews, rotation launch sites
   c. Second observer with additional display or goggles
   d. Potential communication issues with VOs, base
   e. High altitude props may be needed
5. Snow
   a. Need to keep batteries warm
   b. Use appropriate landing gear
   c. Thermal useful given temperature contrast
   d. Mark UAS for better visual against white background
   e. Be aware of quickly changing conditions
6. Avalanche
   a. Thermal useful but also need visual camera for clues
   b. Use warming bags for batteries if in field for period of time
   c. Video link to CP or Field OL helpful for risk assessment/mitigation
   d. Landing pad needed
7. Water obstacle
   a. VOs on both sides of lake, river, creek
   b. Water landing gear
   c. Second display observer helpful for obstacles too small for sensors
8. Nighttime
   a. Part 107 included after 2021 (additional FAA training prior to 2021)
   b. Could include attracting lights for subject

c. Knowing area/terrain important for obstacle avoidance
d. Thermal most useful
e. FAA night flight physiological considerations important

Special payloads

1. Thermal camera (optimally paired with visual camera)
2. Radio repeater
3. High Zoom camera
4. Delivery (radio, light, water, PFD, medicine, etc.)
5. Beacon locator (avalanche)
6. SAR collar

Scouting missions – subject locate

1. steep angle/high-difficulty terrain
2. road clearance, snow coverage
3. field team navigation assistance
4. remote viewing to CP overwatch
5. situational awareness

Appendix C–Emergency Operation Request Form

FAA REQUEST FORM FOR
EXPEDITED SGI WAIVER OR AUTHORIZATION FOR UAS OPERATION

Basic Qualifications
☑ The requesting operator must possess a Certificate of Waiver or Authorization (COA) or Part 107 Pilot License ☑ The UAS operation must support an emergency response or other effort being conducted to address exigent circumstances and that will benefit the public good ☑ The requested FAA approval cannot be secured via normal processes in time to meet urgent operational needs
Operator Information Mandatory entry
Operator Organization (e.g., agency or company)
WASART via King/Snohomish County Sheriff's Office
Operator Address
Operator Point-of Contact (including name, office + mobile phone number, and email)
Pilot and Observers (including names, mobile phone numbers, and emails)
Same as above
Type of UAS and Registration Number
DJI Mini 3 - FA3XMAMRMM
Documentation
If the requested UAS operation will be flown under a pre-existing COA, please attach it hereto and provide the COA number below.
N/A
If the requested UAS operation will be flown under Part 107, please provide the Part 107 Pilot License number below.
Requested Flight Details
Enter the date(s) of the proposed UAS operation (e.g., 03/18/2018 or 03/18/2018-03/21/2018)Mandatory entry

Enter the times of the proposed UAS operation (be sure to confirm time zone; e.g., 1200L-1400L daily)Mandatory entry
Enter the location of the proposed flight (reference the nearest city or town, and state; e.g., Gulfport, MS)
Enter the distance and direction from the nearest airport, and FAA identification of the same (e.g., 6 NM W of GPT)
Identify the class(es) of airspace in which the flight will be conducted (e.g., Class G/E/D/C/B/A)
Requested altitude of UAS flight: Mandatory entry
Enter GIS details defining location of proposed flight (only one area type description needed) Mandatory entry

For those flights remaining within a general contiguous area, which can be described as a circular polygon, provide the latitude and longitude, expressed as **degrees/minutes/seconds**, of the center of that area and the radius of that same area (e.g., XX:XX:XXN / XXX:XX:XXW - .25NM radius)	
For those flights remaining within a general contiguous area, which cannot be easily described as a circular polygon, provide the latitude and longitude, expressed as **degrees/minutes/seconds**, of the vertices of the general area starting with the most northerly point and then progressing clockwise (e.g., (XX:XX:XXN / XXX:XX:XXW; XX:XX:XXN / XXX:XX:XXW; XX:XX:XXN / XXX:XX:XXW)	
For those flights following an extended route, provide the latitude and longitude, expressed as **degrees/minutes/seconds**, of the key waypoints of the route, and, as appropriate provide the width of the route (e.g., XX:XX:XXN / XXX:XX:XXW; XX:XX:XXN / XXX:XX:XXW ; XX:XX:XXN / XXX:XX:XXW ; XX:XX:XXN / XXX:XX:XXW - .25NM wide)	

Nature and Description of Event		
Enter the type of urgent UAS operation to be flown		Description of event
☒	Firefighting Law Enforcement Search and Rescue	Search and rescue of dog down side of cliff

☐	Local / National / Natural Disaster	
☐	Other (specify below)	

Additional Pilot Qualifications	
Enter additional pilot qualifications	
☐	Sport/Recreational/Private pilot certificate
☐	Commercial/Airline pilot certificate
☐	Flight instructor certificate

Contacting the SOSC

The SOSC office and email (9-ATOR-HQ-SOSC@faa.gov) are staffed/monitored 0600-2400 Eastern Time. For all emergencies, please follow up any email with a phone call to 202-267-8276, which is answered 24/7.

Appendix D – Flight Checklists

Pre-Flight

1. Select launch site
2. Firmware – updated
3. Propellers – attached securely and no damage
4. Battery – charged including additional batteries, no damage, installed
5. Gimbal cover – removed and gimbal no damage
6. SD card – inserted and empty
7. Remote control – fully charged and on
8. Flight mode – set to correct mode for flight
9. Aircraft – on and syncing to remote
10. Compass – calibrate
11. GPS – connected

Flight

1. Verify launch site clear
2. Verify crew ready
3. Announce takeoff
4. Start takeoff sequence
5. Takeoff
6. Climb to altitude

In-Flight

1. Aircraft – confirm mode performance
2. Battery/Telemetry – monitor performance
3. Mode change – if needed
4. Return – prior to battery depletion forces auto Return to Home
5. Land

Post-Flight

1a. Fly again? Proceed to Pre-Flight Checklist
1b. Fly complete? Continue Post-Flight Checklist
2. Aircraft – off
3. Remote – off
4. Gimbal cover – on
5. Battery – remove
6. Logbook

7. Download data
8. Upload videos to Dropbox

Emergency

1. Mode change – P
2. Fly aircraft to safe location and hover
3. Attempt to reconnect
4. Advise Command when safe to do so
5. Land ASAP and safely
6. Retrieve aircraft
7. Turn off aircraft
8. Turn off remote
9. Return to base with equipment
10. Inspect all parts for damage
11. Terminate flights until able to troubleshoot

Appendix E – Low Altitude Authorization and Notification (LAANC)

While WASART typically operates in uncontrolled airspace, there is possibility that a mission may be in controlled airspace that requires a waiver to fly in.

LAANC was started in 2017 as part of the FAA UAS Data Exchange Program. It's the first step of the Unmanned Air Traffic Management System (UTM). It provides real time airspace authorization for Part 107 pilots.

AutoPylot – available for both Android and Apple

Appendix F –Flight Record Logbook Samples

Appendix G – Quick Link Guide

1-800 Brief - www.1800wxbrief.com (Weather briefings, Airport conditions, etc)

AutoPylot - www.autopylot.io (LAANC)

SOCS - office phone 202-267-8276 (24/7)

FAA Drone Zone - www.faadronezone-access.faa.gov (submit reports to FAA)

FAA Regional Operations Center - phone 425-227-1999 (>$500 damage, loss of consciousness)

NTSB Response Operations Center - phone 844-373-9922 (serious injury, >$25,000 damage, aircraft collision)