
S.O.P. #: TACTICAL OPERATIONS MANUAL #39
SUBJECT: Deployment of Small Unmanned Aircraft Systems
DIVISION: EMERGENCY OPERATIONS

Objective: To establish guidelines for overall program management, operational deployment, qualification of personnel and training, safety, and maintenance of Small Unmanned Aircraft Systems (sUAS) used by the Baltimore County Fire Department and member companies of the Baltimore County Volunteer Firefighter's Association.

Section 1: Definitions

- A. 14 CFR 107, as amended and as applicable. Chapter 14 of the Code of Federal Regulations, Part 107; the federal law which prescribes the certification requirements, airworthiness standards, and operating limitations for sUAS (drone) operations in the United States.
- B. NFPA 2400, as amended. The NFPA Standard for small unmanned aircraft systems used for public safety operations.
- C. RPIC. Remote Pilot in Command; a person who holds a Remote Pilot Certificate with a small UAS rating and has the final authority and responsibility for the operation and safety of a small unmanned aircraft operation conducted under Part 107, as amended.
- D. Small Unmanned Aircraft System (small UAS). A small unmanned aircraft and its associated elements (including communication links and the components that control the small unmanned aircraft) that are required for the safe and efficient operation of the small unmanned aircraft in the national airspace system.
- E. Visual Observer. A person the RPIC designates as a crewmember who assists the small unmanned aircraft remote pilot in command and the person manipulating the controls to see and avoid other air traffic or objects aloft or on the ground.

Section 2: Management of the Small Unmanned Aircraft Systems Program

- A. The Health and Safety Bureau will be responsible for the overall program management of the sUAS Program to ensure compliance with 14 CFR 107 and NFPA 2400. All non-compliance with the Health and Safety Bureau policies by volunteer or career members must be reported immediately to the Fire Chief and, if applicable, the Company Commander of the volunteer fire company.
- B. Volunteer companies that wish to participate in the sUAS Program must ensure that updated records of the following are sent to the Health and Safety Office in the manner requested by December 31 of each year and as updated:
 - 1. A roster of qualified Remote Pilot in Commands, with a copy of their FAA Remote Pilot Certificate. This will include documentation which demonstrates the aeronautical knowledge recency requirements in accordance with 14 CFR 107.65, as amended.
 - 2. A roster of qualified visual observers, with a copy of any documents or training utilized to qualify such observers.
 - 3. A copy of the registration certificate for all sUAS aircraft owned and/or operated by the company.

NOTE: A Remote Pilot in Command or qualified visual observer must be at least 18 years of age.

- C. Volunteer companies that wish to participate in the sUAS Program must ensure that insurance is obtained on all sUAS owned and/or operated by the company. This insurance must be maintained in accordance with Baltimore County policy.

Section 3: Operational Procedures for Deployment of sUAS

- A. A sUAS deployment must be authorized by the Deputy Chief or Battalion Chief assigned to the call. If a Deputy Chief or Battalion Chief is not assigned to the incident, one should be contacted to obtain approval for sUAS deployment. The Deputy Chief or Battalion Chief must factor the risks versus benefits of such a deployment. Generally, there is little benefit to sUAS deployments on a routine incident (e.g. dwelling fire). Examples of situations which may benefit from the use of sUAS include, but are not limited to:
1. Hazard identification
 2. Atmospheric monitoring (if equipped)
 3. Missing person searches
 4. Large area visibility or survey
- B. A sUAS may only be deployed by a fire department member (career or volunteer) who holds a FAA Remote Pilot Certificate and meets the aeronautical knowledge recency requirements in accordance with 14 CFR 107.65, as amended. This individual will serve as the Remote Pilot in Command (RPIC) of the sUAS and is responsible for conducting all operations in accordance with the Federal Aviation Regulations. The RPIC has final and absolute authority as to whether or not to deploy the sUAS once approval has been given by the Deputy Chief or Battalion Chief.
1. sUAS which are owned or operated by civilians shall not be used for fire department operations under any circumstance. If a civilian is operating a sUAS in proximity to the incident scene which poses a hazard to fire department operations, law enforcement assistance should be solicited.
- C. The RPIC must ensure visual separation of the sUAS with all aircraft traffic in the vicinity. They must be especially alert for manned traffic such as aircraft from the Baltimore County Police Department, Maryland State Police, and local news agencies who may be operating in close proximity to an active incident scene.
- D. Prior to launching any sUAS flight, the RPIC must confirm at a minimum, that:
1. The RPIC is properly qualified and medically fit to perform the mission.
 2. The sUAS has undergone a preflight inspection utilizing a checklist (to include a physical inspection and inspection of all technical components) by the RPIC and it is determined safe for flight.
 3. Observed surface flight visibility at the RPIC control station is a minimum of 3 statute miles, notwithstanding Section 4(C) of this SOP.
 4. The sUAS is operated at least 500 feet below any cloud and 2,000 horizontally from any cloud, notwithstanding Section 4(C) of this SOP.
 5. The sUAS is not being operated within the limits of any controlled, restricted, or prohibited airspace, or within any active Temporary Flight Restriction.
 - a. Operation of the sUAS within controlled or restricted airspace may only be conducted after the RPIC has secured permission from the controlling agency responsible for that airspace. This may be accomplished through a FAA-authorized Low Altitude Authorization and Notification Capability (LAANC) provider.
 6. The sUAS will not be operated in any manner which interferes with operations and traffic patterns at any airport, heliport, or seaplane base.
- E. During sUAS operations, the RPIC will ensure that:
1. The sUAS will not be operated at an altitude greater than 400 feet above ground level (AGL), notwithstanding Section 4(C) of this SOP.
 2. The sUAS will, at all times, yield the right of way to all aircraft, airborne vehicles, and launch and reentry vehicles.
 3. The sUAS remains within visual line of sight of the RPIC and visual observer (if used), notwithstanding Section 4(C) of this SOP.

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4. Only one Fire Department sUAS may be deployed at any given time. Multiple sUAS operations require higher level coordination and should only be considered by the incident commander if a sUAS Branch Director has been established to coordinate flight activities.
 5. There is radio contact with the on-scene incident commander at all times. This task may be delegated to a qualified visual observer.
- F. A qualified visual observer may be utilized to assist the Remote Pilot in Command during sUAS deployment. If utilized, the visual observer must be within the physical vicinity of the RPIC and able to communicate with them without the assistance of a radio. Visual observers are not required to deploy a sUAS mission, but should be utilized if available.

Section 4: Personnel Qualification, Training and Certifications

- A. Only individuals who possess a Federal Aviation Administration Remote Pilot Certificate with a Small Unmanned Aircraft System rating will be eligible to act as a Remote Pilot in Command.
1. Individuals who are operating as a RPIC are responsible for conducting all operations in accordance with 14 CFR 107 and any operating limitations which are imposed upon their Remote Pilot Certificate.
 2. Each volunteer company may set their own local proficiency qualifications for RPICs within their company as long as those standards do not contradict 14 CFR 107 and this SOP. The Bureau Chief of Health and Safety, or their designee, will establish local proficiency qualifications for members of the career department.
- B. Only individuals who have received training as a visual observer may be used in that capacity during an operational deployment. Volunteer companies may conduct training and certify their own visual observers. A listing of qualified visual observers will be provided to the Health and Safety Bureau annually in accordance with Section 2 of this S.O.P. Qualified observer training must cover, at a minimum:
1. General knowledge of sUAS operations.
 2. Airspace requirements, weather conditions, and regulatory requirements necessary for flight.
 3. Ability to review, understand, and support a mission plan.
 4. Operational and flight capabilities of the sUAS being flown.
- C. The Health and Safety Bureau will maintain operational waivers with the FAA for exemptions to operational rules under 14 CFR 107, as amended. RPICs must maintain a copy of any waiver for inspection while operating on any mission where the waiver would be applicable.
1. RPICs may only fly under waivers to 14 CFR 107 while on a mission authorized by the on-scene incident commander.
 2. RPICs may not utilize operational waivers granted to other person(s) or entities (including the RPIC) while on an authorized mission.

Section 5: Safety Considerations

- A. Prior to each flight, the RPIC must check the sUAS and determine that it is in a condition for safe operation.
- B. A no-entry zone of at least 20' x 20' will be designated for launch and recovery of the sUAS. This shall be depicted by flagging tape, cones, or other visual means.
- C. No person may manipulate the flight controls of a small unmanned aircraft system or act as a RPIC, visual observer, or direct participant in the operation of the sUAS if they have reason to know that they have a physical or mental condition that would interfere with the safe operation of the sUAS.
- D. Prior to conducting any flight, the RPIC shall perform a risk assessment of the operational mission. Appendix A of FAA Advisory Circular 107-2A provides guidance on conducting aeronautical risk assessment. If visual observers

or other crewmembers are used, they shall be involved in conducting the risk assessment.

- E. A mission briefing is required by the RPIC and any visual observers or other crewmembers prior to deployment of the sUAS. This briefing shall cover:
1. Objectives of the operational deployment.
 2. Deployment risk assessment.
 3. Considerations for compliance with operational deployment guidelines (e.g. operating in accordance with a waiver, verification of aeronautical recency requirement).
- F. The RPIC must ensure that their focus remains on conducting safe flight operations in support of the mission objectives outlined by the incident commander. The aviation equivalent of a “sterile cockpit” will be required during launch and recovery phases where non-essential communications are prohibited to avoid distractions. Use of personal electronic devices by the RPIC or any crew member supporting the sUAS operation for non-mission related purposes is prohibited during any phase of flight operations.

Section 6: Care and Maintenance of the sUAS, Systems, and Equipment

- A. Care and maintenance of sUAS will be conducted in accordance with the manufacturer’s guidelines for the specific type of sUAS being flown. Any alteration which significantly affects the weight, balance, or change in any critical system (propulsion, GPS, IMU, etc.) of the sUAS shall not be permitted unless in accordance with guidelines provided by the manufacturer.
- B. All sUAS shall be registered with the FAA under Part 107. The FAA registration identification number, along with a contact telephone number, shall be legibly displayed on an external surface of the sUAS prior to any deployment. A copy of the current registration certificate shall be readily accessible by the RPIC during all aircraft operations.
- C. Any alterations, maintenance, and/or routine system checks of the sUAS and/or equipment shall be documented in a log.
- D. Homebuilt or do-it-yourself type sUAS are not permitted unless they have received an airworthiness inspection under 14 CFR 21, as amended.

Section 7: Information Captured by sUAS

- A. The sUAS will not be utilized to monitor members of the public or provide surveillance for law enforcement purposes or to violate any fourth amendment right against search and seizure. Its intended use is to provide greater situational awareness to fire department incident commanders.
- B. In most cases, real-time information will be captured solely to transmit live footage to an incident commander or command post. Although there may be occasional benefits to sharing, recording, and retaining visual data, this is not the intended purpose when a sUAS is launched in the public or in and around public property or domains.
- C. Any photograph or video recording from the sUAS which is obtained on an incident deployment shall become the property of Baltimore County. These items must be retained in accordance with the Baltimore County Office of Information Technology’s Information and Media Protection Policy, and will not include any voice recordings.
1. Any photograph or video recording obtained on an incident deployment must be uploaded to Baltimore County’s approved electronic FileShare system within 24 hours of capture. Photos or video may not be uploaded directly to Baltimore County’s network without first being uploaded to the County’s FileShare system.
 2. Once the photograph or video recording has been uploaded, any local copy is to be permanently deleted and/or destroyed. Local copies of footage from any incident are strictly prohibited. If the footage is needed for an authorized purpose, the Health and Safety Bureau will provide access once it

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has been reviewed.

3. The Health and Safety Bureau will maintain access for the FileShare system in accordance with policies established by the Baltimore County Office of Information Technology.