

UNMANNED AIRCRAFT SYSTEMS (UAS)



2019 GUIDE FOR VIRGINIA AIRPORTS

MESSAGE FROM THE DIRECTOR



COMMONWEALTH of VIRGINIA

Department of Aviation

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Greetings from the DOAV – your partner in aviation for 91 years!

It's hard to imagine that when this agency was founded in 1928, it was just one year after Charles Lindbergh's first successful trans-Atlantic flight! Over the past nine decades, we've experienced some transformative moments in aviation to include moving from single-engine propellers to multi-engine jets; from grass strips to 10,000+ foot runways; from screaming down a runway to vertical take-off and landing. We are now in the early days of yet another transformative moment in aviation as we work to integrate and embrace unmanned aircraft.

While the Federal Aviation Administration oversees the national airspace and is taking the lead on integrating manned aircraft with unmanned aircraft, the Virginia Department of Aviation wants to help airports better understand and manage this new environment during this transition to a world of manned and unmanned aircraft. This guide is designed to help you navigate the rules, policies, procedures that are in place already and to prepare you for the adjustments and changes that will come as the UAS/UAV world matures.

Because the landscape is changing so much and so frequently, we designed this guide so that it can be easily updated as new rules/regulations/policies are promulgated. Our decision to prepare and disseminate this guide in a three-ring binder was purposeful – as we get new information, we will email updates to you so that you can replace an existing page with one that has the latest and greatest information. The guide will also be on our newly-redesigned website, so you have easy access when you are online.

In addition to the main author and editors, this guide was made possible through the efforts of a number of people who are recognized elsewhere in the guide. We owe all of them a debt of gratitude for their contributions, which helped get us to where we are today. I hope you will agree that this guide will prove to be most helpful and of great use to you as you integrate the manned and unmanned world of aviation in and around your airport. And, as always, I welcome your feedback!

With warmest regards,

A handwritten signature in blue ink, appearing to read "Mark K. Flynn". The signature is fluid and cursive, written over a white background.

Mark K. Flynn
Director

MESSAGE FROM THE MANAGER OF AVIATION TECHNOLOGY



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WELCOME to the first edition of the sUAS: GUIDE FOR VIRGINIA AIRPORTS!!! I am extremely excited to share with you this much-anticipated resource.

Unmanned Aircraft Systems (UAS), also known as drones, are growing at an exponential rate throughout the Commonwealth of Virginia, our Country and the world. As of 2017, the Federal Aviation Administration (FAA) asserts that there are more than 19,000 sUAS registered in the Commonwealth of Virginia. Thus, this creates a potential increase in conflicts between manned aircraft and the airspace, especially surrounding airports.

Therefore, a working group of airport directors/managers, public safety personnel, the Virginia Department of Aviation, and the FAA assembled to provide common guidance for the integration of sUAS on or near public airports in the Commonwealth of Virginia.

sUAS are quickly evolving, and airport management is encouraged to be familiar with the FAA rules, regulations and guidance provided at FAA.gov. This guide was designed to aid airports in understanding sUAS and the governing rules and regulations that surround sUAS. Additionally, this guide was designed to give additional guidance on key resources to consider examining with regard to sUAS operations for your organization. Please note that the FAA is the final governing body over UAS. Thus, it takes precedence.

It is my sincere hope that you will find this guide most useful, and I look forward to receiving your feedback to incorporate as we update this guide as regulations, policies and procedures evolve. The Commonwealth of Virginia remains a leader in the unmanned systems industry, and we look forward to working with you to continue elevating Virginia in the unmanned sector.

Very respectfully,

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- **GARY CRAUN**—Manager of Operations/Chief of Public Safety (SHD)
- **TIM MARTIN**—Commonwealth’s Attorney for Augusta County

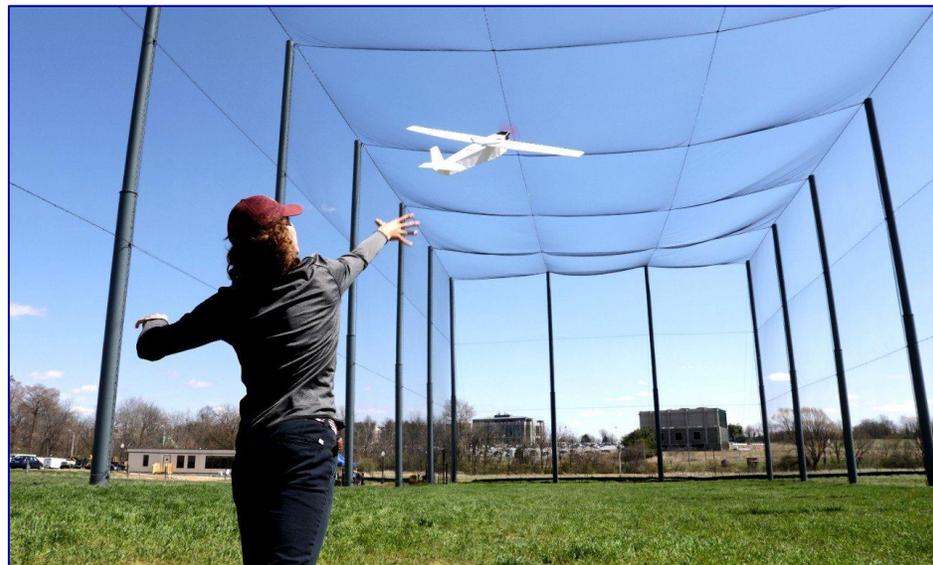
DEFINITIONS

Model Aircraft – an sUAS that is flown for hobby or recreational purposes

Remote Pilot in Command (RPIC) – Pilot in command (PIC) of an sUAS or other remotely piloted aircraft.

Special Government Interest Certificate of Authorization (SGI) – enabling public safety agencies, in the execution of official operations, to receive rapid authorization to operate an sUAS outside of their existing COA or the limits of 14 CFR Part 107.

Unmanned Aircraft System (UAS) – An unmanned aircraft and the equipment necessary for the safe and efficient operation of that aircraft. An unmanned aircraft is a component of a UAS. It is defined by statute as an aircraft that is operated without the possibility of direct human intervention from within or on the aircraft (Public Law 112-95, Section 331(8)).



The official opening of the Drone Park at Virginia Tech. Source: Virginia Tech (2018)

CHAPTER I: INTRODUCTION

Unmanned Aircraft Systems are classified according to their weight. Small UAS are defined as less than 55 lbs. The FAA is still working on the weight definitions of the Medium UAS and the Large UAS, such as the Predator and Global Hawk. Most of this document focuses on the Small UAS (sUAS) but can apply to larger UAS until further guidance is issued by the FAA. Both State and Federal laws are changing at a very quick pace as they pertain to sUAS. All users are encouraged to check applicable/current State and Federal laws before operating an sUAS. All State and Federal laws take priority over this Guide. The first part of this Guide introduces uUAS in Chapter I. Chapter II discusses the sUAS types, which covers rules and regulations. Chapter III discusses sUAS integration on airport property. Chapter IV examines the standard operating procedures and Chapter V addresses counter-drone technology. Last, Chapter VI presents checklists for the different types of sUAS users and Chapter VIII concludes with a summary.

According to the FAA, as of July 2017, more than 19,000 sUAS are registered in the Commonwealth. This number represents a potential increase in conflicts between manned aircraft and the airspace surrounding airport facilities. It also is encouraging



news for the development of increased Academy of Model Aeronautics (AMA) membership, industry associations such as Association of Unmanned Systems International (AUVSI); Science, Technology, Engineering and Mathematics (STEM)

education; promotion of aviation careers; and continued sUAS utilization, research and development of commercial applications and emergency response integration.

The continued growth of the UAS industry and certificated operators will provide a great number of economic opportunities and numerous workforce opportunities, which

support the Governor’s “New Economy” initiatives for Virginia. This growth will also present challenges as we work together with our communities, airports and the FAA to mitigate the increased risk of more aircraft in our national airspace operating in and around our communities and airports.



POTENTIAL SUAS APPLICATIONS



*Eastern Virginia Agricultural Research and Extension Center uses drone technology in agriculture.
Source: Virginia Tech (n.d.)*

The potential uses of sUAS are numerous and growing daily as technology advances. Thus, the following is a small list of the potential uses of sUAS including, but not limited to:

- **ACCIDENT INVESTIGATION**- Local, state and federal investigators are defining ways to utilize the efficiency of sUAS to document scenes of accidents involving air, land and sea vehicles.
- **ACADEMIC RESEARCH AND DEVELOPMENT**- Ongoing research of sUAS capabilities and development of advanced aircraft, sensor capability and application, communications and control links, and counter UAS systems often rely on access to airspace and logistics of traditional air facilities.
- **FACILITIES MANAGEMENT**- Airport facility managers, contractors and developers increasingly use sUAS to provide valuable information on existing conditions to assist in maintenance, development and facility inspections.
- **OBSTRUCTION MAPPING**- The Virginia Department of Aviation is employing the applicability of sUAS to assess obstructions in approach paths of airports in the Commonwealth.

- **CONSTRUCTION MANAGEMENT**- Collection of images and video before, during and after major projects assist airports and contractors in effectively managing complex projects.
- **MARKETING**- High-resolution video and images captured by an experienced photographer and an sUAS can be included in state, regional and local efforts to attract business.
- **ADVOCACY**- Airport managers serve as the local subject matter expert on aviation supporting safety and expansion of aviation careers and services.
- **ECONOMIC DEVELOPMENT**- Localities rely on local airport staff to facilitate additional economic development projects.
- **INDUSTRY RESEARCH AND DEVELOPMENT**- sUAS industry growth of larger aircraft, increased range Beyond Visual Line of Sight (BVLOS) and large-scale development of applications bring financial opportunities to public airports in the Commonwealth.
- **PUBLIC SAFETY**- Integration of sUAS continues to expand in Virginia; currently more than a dozen departments or agencies are operating sUAS for public safety under a Public Air Operations CoA or 14 CFR Part 107 or both.
- **PERIMETER SECURITY**- Checking for gaps in security barriers/ fencing and patrolling for breaches of those barriers.
- **WILDLIFE MANAGEMENT**- Deterring birds and ground-based animals and observing patterns of wildlife on or near airports.



*First FAA approved drone used for Remote Area Medical Clinic in Wise, Virginia.
Source: David Crigger (2016)*

CHAPTER II: sUAS OPERATORS - TYPES

According to the FAA (2019a), there are four types of sUAS Operators:

- **RECREATIONAL FLIERS AND MODELER COMMUNITY BASED ORGANIZATIONS**
- **CERTIFICATED REMOTE PILOTS, INCLUDING COMMERCIAL OPERATORS**
- **PUBLIC SAFETY & GOVERNMENT USERS**
- **EDUCATIONAL USERS**

RECREATIONAL FLIERS AND MODELER COMMUNITY BASED ORGANIZATIONS

Currently, small unmanned aircraft systems (sUAS) may be operated for recreational purposes under specific safety guidelines as established by Congress. The full requirements for Recreational Fliers and Modeler Community Based Organizations can be found in the FAA Reauthorization Act of 2018, under Section 349 (FAA 2019b). It is important to note that Section 336 was repealed and the regulations in Part 101 Subpart E are not valid.

While aero-modelers generally are concerned about safety and exercise good judgment when flying model aircraft for the hobby and recreational purposes for which they are intended, they may share the airspace in which manned aircraft are operating. Unmanned aircraft, including model aircraft, may pose a hazard to manned aircraft in flight and to persons and property on the surface if not operated safely. Model aircraft operations that endanger the safety of the National Airspace System, particularly careless or reckless operations or those that interfere with or fail to give way to any manned aircraft, may be subject to FAA enforcement action.

...full requirements for Recreational Fliers and Modeler Community Based Organizations can be found in the FAA Reauthorization Act of 2018

The FAA (2019b) states there are several items that Recreational Fliers should know.

Those are:

1. You must register your drone. The registration number must be marked on the outside of the aircraft.
2. You must carry proof of registration with you.
3. You are only permitted to fly for recreational purposes.
4. You must follow the community-based organization safety guidelines.

5. You must fly your drone only at or below 400 feet when in uncontrolled (Class G) airspace.
6. You are not permitted to fly in controlled airspace (which is above or around many airports). Therefore, you must obtain authorization prior to flying in class B, C, D or E at the surface. The only exceptions are:
 - a. You are flying at a location that has an agreement with the FAA. These sites are known as recreational fly fixed sites. There are 194 approved sites, and each site has different altitudes in which you are permitted to fly.
 - b. The approved site list can be found at: https://www.faa.gov/uas/recreational_fliers/
 - c. Currently, automated airspace authorizations are available only for those who are Certificated Part 107 Pilots. However, the FAA is working on upgrading the systems to make it available to recreational users. The system is called the Low-Level Altitude Authorization and Notification Capability (LAANC). Therefore, currently, flying in controlled airspace is not permitted and is only limited to the recreational fly fixed sites.
 - d. The FAA welcomes organizations that are interested in establishing a letter of agreement for fixed flying site. If you or your organization is interested, contact: 9-AJT-UAS-Integration@faa.gov.
7. You must keep your drone within your line of sight, or within the visual line-of-sight of a visual observer who is co-located and in direct communication with you. This must occur at all times.
8. You are not permitted to fly in airspace where flight is prohibited. You are responsible for ensuring that you comply with all airspace restrictions, including temporary flight restrictions.
 - a. Airspace restrictions: <https://faa.maps.arcgis.com/apps/webappviewer/index.html?id=9c2e4406710048e19806ebf6a06754ad>
 - b. Temporary flight restrictions: <https://tfr.faa.gov/tfr2/list.html>
9. You are never permitted to fly near other aircraft. This includes airports.
10. You are never permitted to fly over groups of people, public events, or stadiums.
11. You are never permitted to fly near emergencies. Examples are any type of accident response, law enforcement activities, firefighting, or hurricane recovery efforts.
12. You are never permitted to fly under the influence of drugs or alcohol.

There are additional items that are forthcoming with anticipation of being fully implemented by summer of 2019, which is outlined in the new law (FAA 2019b).

1. You must take and pass an online aeronautical knowledge and safety test.
2. You must carry proof of passing the aeronautical knowledge and safety test.
3. The FAA is working on issuing guidance for how it will recognize community-based organizations.

CERTIFICATED REMOTE PILOTS, INCLUDING COMMERCIAL OPERATORS

You are permitted to fly for work or business under Part 107 regulations, if you have a drone that is less than 55 pounds.

PART 107 REGULATIONS

Must be vetted by the Transportation Security Administration (TSA).

Aircraft Requirements:

- Less than 55 lbs.
- Must be registered (14 CFR Part 47 or 48)

Operating Rules*:

- Class G airspace
- Must keep the aircraft in sight (visual line-of-sight)
- Must fly under 400 feet
- Must fly during the day
- Must fly at or below 100 mph
- Must yield right of way to manned aircraft
- Must NOT fly over people
- Must NOT fly from a moving vehicle



*Waivers for some of the above requirements may be obtained through the FAA.

The following are the requirements and process from the FAA (2019b) to obtain a Part 107 Remote Pilot Certificate:

1. Eligibility
 - a. You must be at least 16 years old
 - b. You must be able to read, write, speak and understand English
 - c. You must be in physical and mental condition to safely fly a UAS
 - d. To review the full process on how to become a Part 107 Pilot, visit:
https://www.faa.gov/uas/commercial_operators/become_a_drone_pilot/
2. Exam:
 - a. Take the exam online or at an FAA approved Knowledge Testing Center, depending on if you are a first-time taker or if you currently hold a Private Pilot's Certificate. A person who already holds a pilot certificate issued under 14 CFR Part 61 and has successfully completed a flight review within the previous 24 months can complete a Part 107 online training course at www.faasafety.gov to satisfy this requirement.
 - b. Complete FAA Form 8710-13 for a remote pilot certificate at:
<https://iacra.faa.gov/IACRA/Default.aspx>
 - c. To review the full process on how to become a Part 107 Pilot, visit
https://www.faa.gov/uas/commercial_operators/become_a_drone_pilot/

PUBLIC SAFETY & GOVERNMENT USERS

The FAA (2019c) posits that “Public Safety Agencies, such as law enforcement, are in the best position to deter, detect, and investigate unauthorized or unsafe UAS operations.” For example, sUAS are used in natural disasters and other emergency response situations. In such cases, the FAA will issue authorizations quickly (FAAc).

An sUAS operated in accordance with 49 U.S. Code § 40125 is defined as “an activity undertaken by a government, such as national defense, intelligence missions, firefighting, search and rescue, law enforcement (including transport of prisoners, detainees, and illegal aliens), aeronautical research, or biological or geological resource management.” Government entities or organizations (e.g. law enforcement agencies, public universities, state governments, and local municipalities) have two options for flying sUAS (under 55 pounds):



1. Fly under 14 CFR Part 107, the small UAS rule. Part 107 allows operations of drones or unmanned aircraft system (UAS) under 55 pounds at or below 400 feet above ground level (AGL) for visual line-of-sight operations only.
2. Fly under the statutory requirements for public aircraft (49 U.S.C. §40102(a) and § 40125). Operate with a Certificate of Waiver or Authorization (CoA) to be able to self-certify UAS and operators for flights performing governmental functions.

UAS ENFORCEMENT

The FAA has special agents in the Law Enforcement Assistance Program (LEAP) who are here to assist you in enforcing and reporting unauthorized UAS incidents or accidents. Please note that the below contact information is for use by law enforcement entities ONLY.

LEAP AGENT CONTACT INFORMATION:

- EAST LEAP Branch Manager: 404-305-6816
 - CT, ME, MA, NH, RI and VT special agent: 781-238-7704
 - DE, MD, NJ, NY and PA special agent: 781-238-7073
 - AL, MS, TN, KY and NC special agent: 404-305-6759
 - GA, SC, VA and WV special agent: 404-305-6807
 - North and Central FL special agent: 404-430-1365
 - South FL, PR and VI special agent: 786-778-5923, 786-409-8576

- Washington Headquarters Program Office and D.C. drone incidents: 202-267-4641
- CENTRAL LEAP Branch Manager: 405-954-8569
 - IL, IN, MI, MN, OH and WI special agent: 847-294-7521
 - IA, KS, MO, NE, ND and SD special agent: 816-329-3717
 - OK, AR and LA special agent: 817-222-5742
 - TX and NM special agent: 817-222-5713
- WEST LEAP Branch Manager: 206-231-2093
 - WA, ID, OR, MT and WY special agent: 425-495-1972
 - Northern CA special agent: 916-956-8830
 - Southern CA, NV, CO and Guam special agent: 310-363-9435
 - AZ, UT and HI special agent: 602-721-6091
 - AK special agent: 907-201-0245

EDUCATIONAL USERS

According to the FAA (2019d), there are two options under which a user can fly drones for educational purposes, defined as teaching or training programs; either to fly under Part 107 or to fly as a recreational flier/part of a modeler community-based organization. There are no additional steps for educational users to complete should they decide to fly under Part 107 or fly as a recreational flier/modeler community-based organization.



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The Commonwealth of Virginia remains a leader in the unmanned systems industry, through research and development, testing, and integration of UAS for industrial, commercial and public safety applications. To maintain the momentum, it is necessary to demonstrate the ability of the airports in the Commonwealth to enable sUAS operations for all types of operations. These commercial operations can include airport surveying for FAA requirements and data, marketing, construction progress and monitoring, asphalt integrity, and facilities inspection. Model aircraft clubs have enjoyed a long relationship with area airports with events drawing large crowds of spectators, aviation enthusiasts and small businesses to airfield property.

FAA's written guidance states that airport operators may not prohibit Unmanned Aerial Vehicles (UAV) operations at the airport by UAV operators who have received

The FAA's goal is to safely integrate UAS into the National Airspace

an FAA CoA to do so (REPORT OF ACI-NA MULTI-COMMITTEE TASK FORCE ON UNMANNED AERIAL VEHICLES, AUGUST 2016). UAS operations are considered an aeronautical activity, and the FAA grants assurances to protect the rights of UAS operations. However, the airport operator is responsible for the safe and secure operation of the airport. If the airport operator is concerned about the safe operations or the security of the airport, the operator

can call for local authorities to intervene until the FAA can determine the impact of the requested operations. The airport, in coordination with the FAA, may require additional risk mitigating measures to ensure the safety of all airport users and uninterrupted general aviation and commercial air services.

The FAA's goal is to safely integrate UAS into the National Airspace (NAS). Safety of the NAS is enhanced when the operator of a UAS and the airport operator coordinate prior to a UAS flight on or near an airport. This coordination enhances integration into the NAS by:

- Allowing the airport operator to help the operator of the UAS aircraft understand the areas of manned aircraft flight near the airport, reducing the potential for conflicts between UAS activities and manned aircraft flights;
- Allowing the airport operator to understand the proposed parameters of the UAS activities for situational awareness and coordination with airport tenants and users as necessary;
- Allowing the airport operator to advise the UAS operator of unique manned aircraft activities near the airport (e.g., parachute activities, glider activities, etc.);
- Allowing the airport operator to understand where UAS activities on or near the airport are occurring; and
- Encouraging coordination of the airport sponsor with the local Air Traffic Control (ATC) facilities, Flight Standards District Office (FSDO), and Airports District Office (ADO), and local law enforcement.”

CLASS G

UAS operations, when flying for work, on Class G airfield property do not require the permission of the Airport Manager. 14 CFR Part 107 requires no additional FAA authorizations or waivers other than those that may be imposed on the operator by the airport. These additional requirements may include: proof of insurance, regular CTAF communications, identifiable attire, or additional crew members assigned as



visual observer or coordinator. The Department of Aviation also recognizes that general aviation (GA) aircraft may continue to utilize the facility during sUAS operations and recommends the issuance of a NOTAM-D by the airport between

48 and 72 hours in advance of the sUAS operation. Additionally, the Department of Aviation further recommends that remarks be established on ASOS/ AWOS/ ATIS to maximize notification to manned aviation near the airfield.

UAS operations, when flying for fun, on Class G airfield property are vital to community engagement, promoting the aviation safety culture and advancing interest in aviation careers. Although most airport promotion events in the past have included only radio controlled and scale aircraft displays and demonstrations, more sUAS are being flown recreationally and are now more often a flying segment of the event. The Department of Aviation recommends the continued advocacy and community support by Airport Managers/ Directors or sponsors and continues to support these events in the Commonwealth. UAS operators, when flying for fun, are required to notify the airport or ATC when operating within five statute miles of the airport.

CLASS B, C, D AND SURFACE E

sUAS operation on airport property that includes controlled airspace, requires additional FAA authorizations and / or waivers for the sUAS operator/ entity. Due to the increased complexity of these types of operations, coordination among the UAS crewmembers, Air Traffic Control, and airport personnel is critical for a safe and successful operation. Each operation should be properly coordinated to minimize the impact to commercial and general aviation. Points of consideration include feasibility, applicability, emergency procedures, communication protocols, personnel requirements and crew member roles.

Planning ahead for addressing sUAS notifications is highly advisable. This planning can include conducting basic safety risk assessments to determine where UAV operations would raise substantive safety concerns (e.g., along final approach and initial departure courses; in areas used for flight training or other low-altitude activity); and engaging



in outreach activities with the UAS operator community so that they understand airport operational issues and safety concerns. It is also advisable for airport operators to develop materials that can be displayed on the airport's website

regarding how UAS operators need to coordinate with the airport in the event they plan to fly in the airport vicinity.

WHAT QUESTIONS SHOULD I ASK THE OPERATOR OF AN sUAS?

- a. What is your name and contact information?
- b. Ask for a complete copy of the operator's CoA, Section 333 Exemption (if civilian-owned), and registration certificate. Please note that both the Public UAS operator and UAS operator flying for work need a CoA that specifically authorizes operations from or near your airport. A UAS operator, flying for work, cannot operate from or near an airport with only a Part 107 Remote Pilot Certificate; this UAS operator must have an authorization or waiver issued by the FAA in order to operate from or near an airport.
- c. What are you flying (Make/Model)?
 - Is there additional support equipment needed?
 - What is the color of the sUAS?
 - What is the weight of the sUAS?
 - What are your lost link procedures?
 - What is the ID#?
- d. Do you need access to runways/taxiways? If not, where on the airport property do you want to fly?
- e. When will you be conducting operations and for how long?
- f. At what altitude will you be flying (maximum)?
- g. Who can we contact while the sUAS is in flight? How do we contact you while you are operating the UAS? *Please note that not all CoAs require aviation radios for communication or contact with air traffic, so consider other methods of contact, such as a mobile phone.
- h. Describe how you intend to use the airport and airspace around the airport.

The specific type of UAS activity planned for an airport will dictate the safety factors necessary to integrate UAS into existing airport activities. Safety factors you can consider include, but are not limited to:

a. Runway safety. Coordinate with the UAS operator to ensure that controls are in place to prevent runway incursion.

b. Safety of ground operations. Determine if the UAS operator needs access to runway or taxiway surfaces to launch and recover the UAS. If access is needed, ensure proper controls are in place to ensure the safety of ground operations in the aircraft operational areas. Ensure the UAS operator is properly trained. If the UAS operator wants to use movement areas on the airport with an Airport Traffic Control Tower (ATCT), the specifics of the use of the movement area will be included in the CoA document with the ATCT.



c. Maintain the airfield open and operational for other users of the NAS. Keep the airfield operational areas clear of sUAS support vehicles and activities. Designate areas acceptable for the remotely-located pilot that are not in areas on the airfield that are needed to enhance airfield safety, such as the runway safety areas, taxiway safety areas, object-free areas, etc.

d. Communication. Coordinate with the UAS operator and the local Airport Traffic Control Tower (if applicable) on the specific types of radio communications for the proposed UAS operation. For example, what is the phraseology that is being used during the UAS operation to communicate with the ATCT or on the Common Traffic Advisory Frequency (CTAF) or Unicom? Please note that not all CoAs require aviation radios for communication or contact with air traffic.

e. Coordinate with other airport stakeholders. The UAS operation is different from the typical manned operations at the airport. Consider outreach and other methods to ensure other aeronautical users become aware of and anticipate this particular use on the airport.

f. Facilitate coordination with the local Airport Traffic Control Tower (if one is located at the airport) and the UAS operator on operational requirements while the UAS is in flight.

FAA GUIDANCE FOR SUSPECTED UNAUTHORIZED UAS OPERATIONS

The FAA's safety mandate under 49 U.S.C. § 40103 requires it to regulate aircraft operations conducted in the NAS, which include UAS operations, to protect persons and property on the ground, and to prevent collisions between aircraft and other aircraft or objects. In addition, 49 U.S.C. § 44701(a) requires the agency to promote safe flight of civil aircraft in air commerce by prescribing, among other things, regulations and minimum standards for other practices, methods, and procedures the Administrator finds necessary for safety in air commerce and national security. The FAA has the authority under its existing regulations to pursue legal enforcement action against people operating model aircraft when the operations endanger the safety of the NAS, even if they are operating in accordance with Sections 336(a) and 336(c).

As an aircraft, UAS operations (including those involving Model Aircraft) must be conducted in accordance with the airspace-centric security requirements prescribed by the FAA's regulations and various implementation tools used by the FAA, specifically including airspace with special flight rules and Notice to Airmen (NOTAM) that, among other things, defines Temporary Flight Restrictions (TFR). It is important that UAS operators and Law Enforcement Officers (LEOs) be familiar with the airspace restrictions, respectively, relevant to their operations and their enforcement area of responsibility.



State and local LEOs are often in the best position to deter, detect, immediately investigate, and, as appropriate, pursue enforcement actions to stop unauthorized UAS operations. Although the FAA retains the responsibility for enforcing FAA's regulations, FAA aviation safety inspectors, who are the agency's principal field elements responsible for following up on these unauthorized and/or unsafe activities, will often be unable to immediately travel to the location of an incident.

While the FAA must exercise caution not to mix criminal law enforcement with the FAA's administrative safety enforcement function, the public interest is best served by coordinating and fostering mutual understanding and cooperation between

governmental entities with law enforcement responsibilities. Although there are Federal criminal statutes that may be implicated by some UAS operations (e.g., 49 U.S.C. § 46307), most violations of the FAA’s regulations may be addressed through administrative enforcement measures. As with any other civil or criminal adjudication, successful enforcement will depend on the development of a complete and accurate factual report contemporaneous with the event.

According to the FAA Law Enforcement guidance, there are considerable gray areas regarding what airport operators can do in the event UASs are operated in a manner that endangers manned aircraft operations, people, or facilities on or near an airport. In the U.S., the FAA has stated that while it “retains the responsibility for enforcing Federal Aviation Regulations, including those applicable to the use of [UAVs]”, it recognizes that State and local law enforcement agencies “are in the best position to deter, detect, immediately investigate, and, as appropriate, pursue enforcement actions to stop unauthorized or unsafe [UAV] operations.”

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The FAA has also noted that public-use airport operators have the responsibility to keep the airport and the surrounding areas free from hazards that could impact the safe operation of the airport. These statements indicate that the FAA expects local law enforcement and airport operators to assume some additional roles for detecting and deterring hazardous and unauthorized UAV activity. The FAA doesn’t explicitly discuss the resources necessary to perform these functions—in terms of personnel, technology, and dollars. However, these are major concerns for both local law enforcement and airport operators.

State and local officials are urged to use their governmental unit’s legal resources and their own management chain to develop acceptable protocols for dealing with these instances. Visit: https://www.faa.gov/uas/resources/law_enforcement/ for FAA’s Law Enforcement Guidance for Suspected Unauthorized UAS Operations.

CHAPTER IV: DEPARTMENT OF AVIATION- SECURITY STANDARD OPERATING PROCEDURES

UAS flights that either conflict with manned aircraft or other airport operations, by traditional hobby or newly certificated civil operators, are regulated by both the FAA and by Virginia Aviation Code. Although the goal of the Department of Aviation is to encourage safe and responsible sUAS operations, it is important that airport facilities remain vigilant to uneducated and nefarious operators that may interfere with general aviation and commercial air travel.

The FAA encourages local law enforcement to investigate and report to the FSDO any incident that arises from unauthorized sUAS use. Therefore, it is the Department



of Aviation's intent to support, through standard operating procedures, the airport responsibilities to the FAA and to their local law enforcement officials.

A collaborative relationship among airports and local law enforcement, municipal stakeholders, and other community

members remains a key part of educating the public on the safe use of sUAS, whether hobby in nature or civil. Pilot reports/ sightings to an airport are handled under existing FAA reporting methods; however, it may be necessary to notify local law enforcement when feasible.

BACKGROUND

Reports of unmanned aircraft (UAS) sightings from pilots, citizens and law enforcement have increased dramatically over the past two years. The FAA now receives more than 100 such reports each month. The agency wants to send out a clear message that operating drones without proper coordination around airplanes, helicopters and airports is dangerous and could be illegal. Unauthorized operators may be subject to stiff fines and criminal charges, including possible jail time.

There are three types of unauthorized flights that pose a threat to safe airport operations: clueless, careless and criminal. Each classification of operator requires the airport manager and local law enforcement to treat each encounter independently. Individuals who are unaware of any FAA regulations or rules governing their purchase may respond in a surprised or confused manner when approached. The FAA, in this instance, promotes education before enforcement. Additionally, an operator who operates an sUAS in close proximity to airports, manned aviation or otherwise in a careless or reckless manner who is unaware that sUAS can cause potential, increased dangers caused by failure to know their equipment. The accessibility of small, affordable sUAS has not only increased the interest in aviation, but also the number of potentially dangerous interactions. Lastly, criminal intentions can vary immensely from blatant disregard, negligence or malicious intent.

AIRPORT RESPONSIBILITY

1. Provide subject matter expertise to local law enforcement and municipality stakeholders.
2. Identify operator- age, height, race, sex, hair color, etc.
3. Provide description of sUAS- color, type, manufacturer, propulsion, registration number (if applicable) etc.
4. Provide location details- launch location, description of flight path, recovery location.
5. Notify local law enforcement and FSDO.



LAW ENFORCEMENT RESPONSIBILITY

1. Provide timely, actionable response to airport facility request for assistance.
2. Evidence collection.
3. Report to FSDO for possible federal prosecution.
4. Educate, advocate, or prosecute operator under existing Virginia Aviation or Criminal Code.

It is recommended that each airport manager or designee facilitate relationships that protect the airport facility from unauthorized UAS operations. Airport managers shall coordinate with local, regional and state law enforcement agencies

to provide opportunities to educate and familiarize personnel with airport operations, airspace configuration, and other pertinent items that are necessary for the continued safety of manned aviation and activities.

Public safety and airport facility personnel should be trained on flight rules and regulations as they pertain to hobby and civil operations, familiarization of existing Codes of Virginia that apply to unmanned aircraft operating inside the Commonwealth, evidence collection, and reporting options.

REGISTRATION CHECK

All UAS operated for work, weighing more than 0.55 pounds (8.8 ounces), including everything onboard or attached, are required to be registered and marked before flown outdoors per 14 CFR Section 48.15. In addition, the law (49 USC Section



44103(d)) requires the operator to make the certificate of registration for the aircraft available for inspection when requested by a representative of the United States Government, or by any

state or local law enforcement officer. Law enforcement officers also have a right to inspect the registration number and review the accompanying Certificate of Aircraft Registration, which the sUAS pilot must carry in paper or electronic form. The unique FAA-issued registration number begins with either “N” or “FA,” and it must be readily accessible on the aircraft. The ID number must be displayed externally on the aircraft.

AIRCRAFT USE CHECK

The law enforcement officer must try to ascertain if the flight is for fun or for work as different rules govern the operation. The FAA exercises control over both as stated in 49 USC Section 40102(a) (6): an aircraft is “any contrivance invented, used,

or designated to navigate or fly in the air.” The FAA defines an aircraft as “a device that is used or intended to be used for flight in the air” under 14 CFR section 1.1.

Title 14 further defines that a model aircraft is an unmanned aircraft that is:

- Capable of sustained flight in the atmosphere
- Flown within visual line of sight of the person operating the aircraft
- Flown for hobby or recreational purposes

Public Law 112-95 section 336 (amending 49 USC), makes it clear that the FAA has the authority under existing regulations to pursue legal enforcement action against people operating model aircraft when the flight endangers the safety of the NAS.

PILOT CHECK

Model aircraft operators do not require a “license” (pilot certificate) to operate as long as they are flying within safety guidelines and using a model aircraft in accordance with a community of practice standard. The safety guidelines published by the FAA and the AMA community are general guidelines for pilots that pursue recreational sUAS flights. Operators of any model aircraft, in the pursuit of pleasure or relaxation outside of work, are not subject to the 14 CFR Part 107, but are still required for the safe operation of their aircraft and operating within those guidelines.

sUAS operators who fly for work must be a certificated remote pilot and operate according to 14 CFR Part 107. The minimum age for a remote pilot certificate is 16.

A certificated UAS operator must carry the certificate, which is a plastic card with a unique certificate number and personally identifiable information. Upon request by law enforcement, an

sUAS pilot may voluntarily present her/his certificate to show that she/he are allowed to fly under Part 107 sUAS rules; however, she/he must show her/his certificate to a representative of the FAA according to 14 CFR Part 107.7.



Code of Virginia, Section 5.1-15 requires “any person who operates any civil aircraft within the airspace over, above, or upon the lands or waters of this Commonwealth, without being, at the time of such operation, in possession of a valid airman's certificate for such operation, issued under and in accordance with existing federal law shall be deemed to be guilty of a Class 1 misdemeanor.”

AIRSPACE CHECK

Model aircraft flying is permitted as long as the operator follows model aircraft rules and a community-based set of flight safety guidelines. However, if she or he is flying **within five miles** of an airport, the pilot must notify the airport operator and, if available, the airport air traffic control tower.

Operations that may cause security or safety concerns by the airport manager or air traffic controller should be detailed to the model aircraft operator at the time of notification, and may include requests to limit altitude, an alternate location, or other risk mitigation options. It may also be necessary to alert the model aircraft operator of current Virginia Code, 5.1-13, “Any person who shall operate any aircraft within the airspace over, above or upon the lands or waters of this Commonwealth carelessly or heedlessly in willful or wanton disregard of the rights or safety of others, or without due caution and circumspection and in a manner so as to endanger any person or property, shall be guilty of a misdemeanor.”

Part 107 operators, both commercial and recreational, are restricted to flying in Class G airspace. However, the FAA can issue a waiver to allow flying for work in Class B, C, D, and within the lateral boundaries of Surface E airspace. The operator must apply through an online process at www.FAA.gov that involves proving the purpose of operation and method by which the proposed operation can be safely conducted. If the remote pilot holds such a waiver or authorization, he or she must carry it during UAS operations. Additionally, it is recommended that operators with waivers or authorizations, coordinate with ATC and the airport management.

SAFETY CHECK

In general, an unsafe UAS operation may look like:

- Aircraft out of operator's visual line-of-sight;
- Flight over 400 feet above ground;
- Flight at night;
- Flight at more than 100 mph;
- Failure to yield right-of-way to manned aircraft;
- Flight over people; and/or
- Operating from a moving vehicle.



For model aircraft, community-based flight safety guidelines generally address these issues.

For UAS operators flying under 14 CFR Part 107, these are the FAA's rules that the remote pilot in command must comply with, unless the pilot has a waiver or authorization. If there is an accident involving a Part 107 UAS, the remote pilot is required to report it within 10 days if there is serious injury or loss of consciousness, or if the damage is more than \$500, excluding the sUAS. The FAA has the statutory authority to inspect and investigate whether aircraft are in compliance with regulations at any time.

LAW ENFORCEMENT

Law enforcement can utilize smartphone apps, e.g. AirMap, to verify the type of airspace and types of operations permitted under Part 107 and those that require additional FAA authorizations or waivers. Airport managers and air traffic controllers may provide additional training to local enforcement or other municipality officials of the airspace, traffic patterns, etc.

A law enforcement officer should gather information and report it to her/his FAA FSDO; however, there are separate state statutes available to law enforcement officers in order to take immediate action with respect to hazardous situations or sUAS operations resulting in risk to person or property.

Appropriate data collection during first responses and intra-agency communication help keep all levels of government positioned to both collect and share information that may be of interest to each jurisdiction. This information can include witness interviews, identification of operators, pictures of the location, and notification to FSDO. To aid LEOs with responding to UAS, the FAA developed pocket cards that can be downloaded and printed at:

[https://www.faa.gov/uas/public_safety_gov/media/Basic Law Enforcement Response Drone Card.pdf](https://www.faa.gov/uas/public_safety_gov/media/Basic_Law_Enforcement_Response_Drone_Card.pdf) or in Appendix F.

Additionally, the FAA developed guidance on handling drone incidents that can be found at:

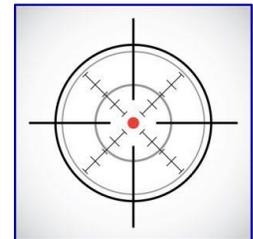
[https://www.faa.gov/uas/public_safety_gov/media/Law Enforcement Drone Card.pdf](https://www.faa.gov/uas/public_safety_gov/media/Law_Enforcement_Drone_Card.pdf) or in Appendix G.



CHAPTER V: COUNTER-DRONE TECHNOLOGY

Counter-drone technology, also known as Counter-UAS, is defined as... “systems that are used to detect and/or intercept unmanned aircraft” (Bard College 2019). According to the Department of Transportation (2018), there are 878,000 recreational sUAS fliers and 122,000 commercial, public or other drone users in the United States. Thus, there are roughly more than one million registered drones in the United States. It is important to note that when recreational fliers register their first drone, they receive a registration number (Department of Transportation 2018). Recreational fliers use that one number for any of the sUAS they own. On the other hand, commercial sUAS users must register each drone individually (Department of Transportation).

With more than one million drones registered and regulations in place, this is not stopping some users from breaking regulations. A recent two-week study at Daytona Beach International Airport, completed by Embry-Riddle Aeronautical University, found that 7% of the users exceeded the maximum altitude limit of 400 feet or below (Turner 2019). Furthermore, the study found that 21% of users exceeded the maximum altitude restrictions for certain areas around the airport (Turner 2019). For example, within a mile from the center of the airport, there were eight drones detected, and one of those drones was about a quarter mile from an approach path to an active runway, with an altitude of 90 feet (Turner 2019).



With the rise in drones in the airspace, this has left Airport Management and other aviation stakeholders asking the question, what measures can be put in place to ensure a safe, effective and efficient airport? Bard College’s Center for the Study of Drone (2019) found that 235 counter-drone technologies exist. There are 155 sUAS manufacturers, 88 systems capable of detection only; 80 systems capable of interdiction only; and 67 systems capable of both detection and interdiction (Michel 2018). There are six methods for detection and tracking systems:

1. radar,
2. radio-frequency (RF),

3. electro-optical (EO),
4. infrared,
5. acoustic, and
6. combined sensors (Micel 2018).

Seven types of sUAS interdiction systems exist:

1. RF jamming,
2. GNSS jamming,
3. spoofing,
4. laser,
5. nets,
6. projectile, and
7. combined interdiction elements (Michel 2018).

Michel (2018) posits that there are three platform system types:

1. ground-based,
2. hand-held, and
3. UAV-held.

While counter-drone technology has proven successful, it is not without challenges, such as detection effectiveness, distinguishing legitimate and illegitimate drone use, false positives and false negatives, interdiction hazards and interaction effectiveness.



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AIRPORT CHECKLIST- RECREATIONAL FLYING

Model aircraft operators are required to **notify** any airport if operating within five miles. It is necessary that airport staff be trained properly to document this notification. When notified of Part 101 operations that pose no hazard:

1. Acknowledge the notification, and
2. Do not use the word “approved” in the communication with the operator.

Items that should be requested of the operator by the airport include:

1. Name of operator,
2. Location of flight,
3. Altitude of flight,
4. Time and duration of flight, and
5. Contact number of the operator.

If the facility determines that the operation would endanger the safety of the national airspace system:

1. Deny the operation,
2. State the reason for denial, and
3. Offer alternative locations and path forward.

The information provided by the operator can be used to alert other pilots in the area of the sUAS flight, identify operator and location to corroborate any pilot reports, and ensure the airport has the ability to call back the operator if conditions change that may affect the safe operation of the airport or the sUAS operator.

AIRPORT CHECKLIST- FLYING FOR WORK

Flights conducted under 14 CFR Part 107 are authorized in Class G airspace. Other airspace operations, to include Class B, C, D or inside the lateral boundaries of Surface E, require the operator to be granted an authorization or waiver. This authorization or waiver is requested by the operator, responsible person, or agency

through the online portal. Approvals through the online portal are based on predetermined locations and altitudes relative to the existing traffic patterns or airspace classifications associated with the airport. Airport managers can review the online map of areas, with associated allowable altitudes above ground level, used for the approval of authorizations and waivers at <https://faa.maps.arcgis.com/apps/webappviewer/index.html>

It is expected that these maps will allow the FAA to permit instant authorizations in controlled airspace by summer 2019. This system, LAANC, Low Altitude Authorization and Notification Capability, is designed to provide civil operators with a method to get



real-time airspace authorization. Subsequently, notifications of authorizations will be viewable by airport managers and ATCs in real-time.

At this time, all requests or inquiries for Part 107 flights in controlled airspace should be referred to the online FAA website: https://www.faa.gov/uas/request_waiver/. Operators may contact airports in Class G airspace as a courtesy, especially when operating within a mile of the Airport Reference Point (ARP). This contact should be recorded and alerted to any special conditions or operations that may be affected by the sUAS operation.

AIRPORT CHECKLIST- ACADEMIA

The furtherance of education, as interpreted by the FAA, is regulated under 14 CFR Part 101. Institutions of higher learning that utilize sUAS for educational purposes can choose to operate under a community-based organization's set of guidelines, e.g. AMA. These operations, when within five miles of an airport, require notification of the flight to airport staff or ATC. Additionally, all recommendations for model aircraft are to be followed by students and teachers, with strict adherence to safety of the airspace and without interfering with airport operations.

AIRPORT CHECKLIST- PUBLIC SAFETY

Public safety departments, operating sUAS for a government function as defined in 49 USC 40125(a), are granted a Public Air Operations Certificate of Operations. This CoA provides the agency a “blanket” authorization that permits UAS operations in Class G airspace:

1. Below 400ft AGL,
2. Five miles from a public, towered airport,
3. Three miles from a public airport with an ILS approach, but without an operational tower,
4. Two miles from a public airport without an ILS approach and without an operational tower, and/or
5. One mile from a public heliport or seaplane base.

Agencies that are required to operate outside of the “blanket” authorization will have a jurisdictional CoA, enabling operations to be conducted in class A, B, C, D or Surface E airspace that goes to the surface. It is recommended that airports within the Commonwealth of Virginia coordinate with their municipality’s public safety departments to address any specific concerns, questions or procedural items that would increase the department’s ability to safely operate near the airport facility.

Public safety departments that operate under a Public Air Operations Certificate of Authorization when operating in the vicinity of an airport without an operating control tower are required to announce operations on appropriate Unicom/CTAF frequencies alerting manned pilots of sUAS operations. Additionally, a NOTAM-D, no less than 30 minutes prior to operating, is required to be published by a NOTAM issuing authority. Using NOTAMs for advance notification is highly encouraged. Operations may also be conducted during the day and night. Night operations require the public agency to utilize lighted, anti-collision lighting and **may** be restricted to 200ft AGL as a condition of their FAA authorization.



Public safety departments may also operate under 14 CFR Part 107. However, in an emergency situation, the agency may request a Special Government Interest (SGI) Certificate of Authorization to conduct an sUAS operation that is outside of its current authorization. This SGI CoA can be issued to the agency, entity sponsored or supported by the agency, whether operating with a Public Air Operations CoA or in possession of a remote pilot certificate.

Having an existing Memorandum of Understanding or Letter of Agreement will provide expedited responses to an SGI request, and promote safe interoperability between airport personnel and department UAS operators. This coordination is essential to all stakeholders and provides a pre-established set of procedures and expectations when UAS operations are necessary to respond to emergencies. Airports should continue to coordinate and collaborate with their local public safety departments on the operations of UAS.



CHAPTER VII: SUMMARY

Operators of model, civil, and public safety sUAS are rapidly increasing in numbers as technology continues to advance, costs decline and the necessary skills to fly an aircraft are reduced. The advantages of advanced flight control systems and avionics, coupled with software, are enabling more people to enter the national airspace system in greater numbers than ever before. It is expected that more than 2 million unmanned aircraft will enter the NAS this year.

The combined efforts and continued collaboration among airport managers, municipalities, industry and academia will play an integral role in maintaining a safe environment for all pilots, developing additional economic development, and supporting the “new economy” of Virginia, and increasing interest, investment, and education in the aviation field.



APPENDIX A - FEDERAL REGULATIONS

The following Federal Regulations and guidance can be found at:

https://www.faa.gov/uas/resources/policy_library/

Presidential Guidance and Laws

- Presidential Memorandum: Promoting Economic Competitiveness While Safeguarding Privacy, Civil Rights, and Civil Liberties in Domestic Use of Unmanned Aircraft Systems
- Public Law 112-95, Title III, Subtitle B – Unmanned Aircraft Systems (PDF) (FAA Modernization and Reform Act of 2012)
- Public Law 114-90, Title II, Subtitle B – UAS Safety (FAA Extension, Safety, and Security Act of 2016) (PDF)

Title 14 Code of Federal Regulations

- Part 1, Definitions, Civil Aircraft, section 1.1
- Part 21, Certification Procedures for Products and Parts
- Part 21, Subpart H, Airworthiness Certificates, Experimental Certificates, sections 21.191 and 21.193

Notices

Clarification of the Applicability of Aircraft Registration Requirements for Unmanned Aircraft Systems (UAS) and Request for Registration Regarding Electronic Registration for UAS

Rules

- Summary of the Small UAS Rule (Part 107) (PDF)

Advisory Circulars

- AC 107-2 – Small Unmanned Aircraft Systems (Part 107) (PDF)
- AC 00-1.1B – Public Aircraft Operations
- AC 91-57A – Model Aircraft Operating Standards
- AC 21-12 – Application for U.S. Airworthiness Certificate, FAA Form 8130-6
- AC 45-2E – Identification and Registration Marking

Policies

FAA Order JO 7200.23, Unmanned Aircraft Systems (UAS)

- Notice 8900.291 – Inspection and Maintenance Program Requirements for Airworthiness Certification of Unmanned Aircraft Systems Operating Under 55 Pounds
- Notice 8900.292 – Aviation-Related Videos or Other Electronic Media on the Internet
- UAS Temporary Flight Restrictions (TFRs) for Sporting Events (PDF)
- 2007 Federal Register Notice, Unmanned Aircraft operations in the National Airspace System (PDF)
- Notice 8900.313 Education, Compliance, and Enforcement of Unauthorized Unmanned Aircraft Systems Operators
- UAS Certification Status, November 15, 2006, includes FAA focal points for UAS certification project coordination (PDF)
- UAS Certification Status, Optionally Piloted Aircraft and Accidents Involving UAS, August 18, 2008, Revision to AVS Policy (PDF)

Orders

- Order 8000.372A – UAS Designated Airworthiness Representatives (DAR) for UAS Certification at UAS Test Sites
- Order 1110.150 – Small Unmanned Aircraft System Aviation Rulemaking Committee (ARC)
- Order 2150.3B – Change 6 (Compliance and Enforcement Bulletin)
- Order 8130.2 – Airworthiness Certification of Aircraft and Related Products
- Order 8130.34C – Airworthiness Certification of Unmanned Aircraft Systems

FAA Legal Interpretations on Unmanned Aircraft Systems

- Educational Use of Unmanned Aircraft Systems (UAS) (PDF)
- Media Use of UAS (PDF)
- Clarification of June 13, 2014 Interpretation of Research Using UAS (PDF)
- Operation of UAS as Public Aircraft for Educational Purposes (PDF)
- Interpretation regarding whether certain required documents may be kept at an unmanned aircraft's control station (PDF)

Guidance

- Updated Information on UAS-Detection and Countermeasures Technology (Counter-UAS) at Airports, May 2019 (PDF)
 - Attachment 1, July 19, 2018, Letter from FAA Office of Airports on Guidance on Use of Counter UAS Systems at Airports (PDF)

- Attachment 2, Frequently Asked Questions and Answers Concerning UAS Detection Systems (PDF)
- Attachment 3, Unmanned Aircraft Systems Detection – Technical Considerations (PDF)
- Section 352 Responses to the 2018 FAA Reauthorization Act
- Voluntary Best Practices for UAS Privacy, Transparency, and Accountability
- State and Local Regulation of Unmanned Aircraft Systems (UAS) (PDF)
- Law Enforcement Guidance for Suspected Unauthorized UAS Operations (PDF)
- Letter to CoA Holders – Statutory Requirement to Register UAS (November 5, 2014) (PDF)
- Public Guidance for Petitions for Exemption Filed under Section 333 (PDF)

Forms

- FAA Form 8130-6 – Application for U.S. Airworthiness Certificate (PDF)

Publications

- Second Edition – Integration of Civil UAS in the NAS Roadmap (PDF)
- Integration of Civil UAS in the NAS Roadmap (PDF)
- UAS Comprehensive Plan (PDF)
- Micro UAS Aviation Rulemaking Committee Report (PDF)

APPENDIX B - VIRGINIA LAWS & REGULATIONS

Va. Code §15.2-926.3: Aircraft, certain; local regulation.

Local regulation of certain aircraft. Provides that no locality may regulate the use of privately owned, unmanned aircraft systems within its boundaries.

Va. Code § 27-15.1: Unmanned aircraft systems; work group to explore issues related system activities.

Department of Aviation; unmanned aircraft systems. Directs the Department of Aviation to convene a work group with stakeholders to explore issues related to unmanned aircraft system activities in coordination with the Federal Aviation Administration and other responsible federal agencies. The bill defines "unmanned aircraft" and "unmanned aircraft system" for application to Title 5.1 (Aviation), but such definitions shall not become effective unless reenacted by the 2019 Session of the General Assembly.

VA Code § 15.2-926.3: Local regulation of certain aircraft.

No political subdivision may regulate the use of a privately owned, unmanned aircraft system as defined in § 19.2-60.1 within its boundaries. Nothing in this section shall permit a person to go or enter upon land owned by a political subdivision solely because he is in possession of an unmanned aircraft system if he would not otherwise be permitted entry upon such land.

VA Code § 18.2-121.3: Trespass with an unmanned aircraft system; penalty.

- A.** Any person who knowingly and intentionally causes an unmanned aircraft system to enter the property of another and come within 50 feet of a dwelling house (i) to coerce, intimidate, or harass another person or (ii) after having been given actual notice to desist, for any other reason, is guilty of a Class 1 misdemeanor.

- B.** This section shall not apply to any person who causes an unmanned aircraft system to enter the property as set forth in subsection A if (i) consent is given to the entry by any person with legal authority to consent or by any person who is lawfully present on such property or (ii) such person is authorized by federal

regulations to operate an unmanned aircraft system and is operating such system in an otherwise lawful manner and consistent with federal regulations.

VA Code § 18.2-324.2: Use of unmanned aircraft system for certain purposes; penalty.

- A.** It is unlawful for any person who is required to register pursuant to § 9.1-901 to use or operate an unmanned aircraft system to knowingly and intentionally (i) follow or contact another person without permission of such person or (ii) capture the images of another person without permission of such person when such images render the person recognizable by his face, likeness, or other distinguishing characteristic.
- B.** It is unlawful for a respondent of a protective order issued pursuant to § 16.1-279.1 or 19.2-152.10 to knowingly and intentionally use or operate an unmanned aircraft system to follow, contact, or capture images of the petitioner of the protective order or any other individual named in the protective order.
- C.** A violation of this section is a Class 1 misdemeanor.

VA Code §19.2-60.1: Use of unmanned aircraft systems by public bodies; search warrant required.

- A.** As used in this section, unless the context requires a different meaning:

"Unmanned aircraft" means an aircraft that is operated without the possibility of human intervention from within or on the aircraft.

"Unmanned aircraft system" means an unmanned aircraft and associated elements, including communication links, sensing devices, and the components that control the unmanned aircraft.

- B.** No state or local government department, agency, or instrumentality having jurisdiction over criminal law enforcement or regulatory violations, including but not limited to the Department of State Police, and no department of law enforcement as defined in § 15.2-836 of any county, city, or town shall utilize an unmanned aircraft system except during the execution of a search warrant issued pursuant to this chapter or an administrative or inspection warrant issued pursuant to law.

- C.** Notwithstanding the prohibition in this section, an unmanned aircraft system may be deployed without a warrant (i) when an Amber Alert is activated pursuant to § 52-34.3; (ii) when a Senior Alert is activated pursuant to § 52-34.6; (iii) when a Blue Alert is activated pursuant to § 52-34.9; (iv) where use of an unmanned aircraft system is determined to be necessary to alleviate an immediate danger to any person; (v) by a law-enforcement officer following an accident where a report is required pursuant to § 46.2-373, to survey the scene of such accident for the purpose of crash reconstruction and record the scene by photographic or video images; (vi) by the Department of Transportation when assisting a law-enforcement officer to prepare a report pursuant to § 46.2-373; (vii) for training exercises related to such uses; or (viii) if a person with legal authority consents to the warrantless search.
- D.** The warrant requirements of this section shall not apply when such systems are utilized to support the Commonwealth or any locality for purposes other than law enforcement, including damage assessment, traffic assessment, flood stage assessment, and wildfire assessment. Nothing herein shall prohibit use of unmanned aircraft systems for private, commercial, or recreational use or solely for research and development purposes by institutions of higher education and other research organizations or institutions.
- E.** Evidence obtained through the utilization of an unmanned aircraft system in violation of this section is not admissible in any criminal or civil proceeding.
- F.** In no case may a weaponized unmanned aircraft system be deployed in the Commonwealth or its use facilitated in the Commonwealth by a state or local government department, agency, or instrumentality or department of law enforcement in the Commonwealth except in operations at the Space Port and Naval/Aegis facilities at Wallops Island.
- G.** Nothing herein shall apply to the Armed Forces of the United States or the Virginia National Guard while utilizing unmanned aircraft systems during training required to maintain readiness for its federal mission or when facilitating training for other U.S. Department of Defense units.

Washington D.C., No Drone Zone

Per the FAA, the National Capital Region is governed by a Special Flight Rules Area (SFRA) within a 30-mile radius of Ronald Reagan Washington National Airport, which restricts all flights in the greater DC area. Flying a drone within 15 miles of the airport is prohibited; flying a drone within 15 to 30 miles of the airport is allowed with certain restrictions.



APPENDIX C - MEMORANDUM OF UNDERSTANDING

Memorandum of Agreement between the U.S. Department of the Interior and the Federal Aviation Administration Regarding Operation of Small Unmanned Aircraft Systems in Class G Airspace

A. Introduction: This Memorandum of Agreement (MOA) between the U.S. Department of the Interior (DOI) and the Federal Aviation Administration (FAA) sets forth provisions that will allow DOI-operated small Unmanned Aircraft Systems (sUAS) increased access to Class G airspace for public aircraft operations in accordance with applicable laws and government agency policy.

B. Purpose: The purpose of this MOA is to allow DOI to access the National Airspace System (NAS) through the Certificate of Waiver or Authorization (COA) via Notification process for small UAS operations.

C. Scope: The policies, procedures and operations prescribed in this MOA apply to DOI sUAS operations involving scientific applications, wildlife surveys and Search and Rescue (SAR) efforts, that qualify as a public aircraft operation under 49 U.S.C. §§ 40102(a)(41) and 40125. All operations will be conducted within Class G airspace at or below 1200 ft. Above Ground Level (AGL), and authorized through a Certificate of Waiver or Authorization (COA) via Notification procedures.

D. Authority: Title 49 of United States Code (49 USC) § 106 provides the authority to the FAA to set aviation safety standards and regulate aviation operations in the National Airspace System (NAS). Title 49 U.S.C. §§ 40102(a)(41) and 40125 provide the legal basis for operation of public aircraft operations in the United States.

E. UAS Airworthiness Certification: The DOI assumes responsibility that the sUAS it will operate under this MOA are airworthy and in condition for safe operation based on the manufacturer's specifications, technical manuals and maintenance recommendations for the aircraft, control station, and associated support equipment. Where appropriate for unmanned aircraft, the aviation standards detailed in DOI Department Manuals 351 DM, Flight Operations Standards and Procedures, and 352 DM, Aviation Safety, shall be applied. More specific guidance is contained in DOI Operational Procedures Memorandum (OPM) No.11, DOI Use of Unmanned Aircraft Systems, and Office of Aviation Services (OAS) Instruction 5400-202.

APPENDIX D - SAMPLE STANDARD OPERATING PROCEDURES FOR sUAS USE ON AIRPORTS

Date: Day Month Year

Section 1. SUBJECT: Unmanned Aircraft System (sUAS) operations on the
XXXAIRPORTXXX

Section 2. PURPOSE: Establish standard operating procedures (SOPs) for the
operations of sUAS on XXXAIRPORTXXX property.

Section 3. SCOPE: These procedures herein apply only to the sUAS operations within
the FAA authorizations if applicable, and the associated addendums for
operations within the Commonwealth of Virginia portion of the property and/
or the immediate airspace within five miles of the XXXAIRPORTXXX

Section 4. STANDARD OPERATING PROCEDURES- sUAS

Section 4.1. Requirements: Operator

Section 4.1.1. sUAS operations will be confined to the designated operating area

Section 4.1.2. Operator will provide Airport with:

- i. Crewmember name(s) and contact information
- ii. Copy of operator(s) FAA Airman Certificate, if applicable
- iii. Complete copy of any FAA documentation required to operate a UAS, i.e.
Certificate of Authorization, Aircraft Registration, and other supporting
documentation
- iv. Type of aircraft
- v. Complete flight plan, emergency procedures, and risk mitigation plan

Section 4.1.3. Operator will identify:

- i. Lost link location(s) and aircraft safety measures in the event of the loss of
command and control link(s)
- ii. Launch and Recovery location
- iii. Emergency Controlled Flight into Terrain (CTIF) location

Section 4.1.4. Operator will be responsible to comply with all vehicle, personnel and
other safety measures required for movement on airport property:

- i. Accessory vehicle lighting
- ii. High-visibility attire
- iii. Vehicle and personnel movement restrictions
- iv. Any unauthorized areas

Section 4.1.5. Operator will comply with any other requirements identified by
XXXAIRPORTXXX necessary to maintain safety of flight operations.

Section 4.1.6. Operator will provide XXXAIRPORTXXX Proof of Liability Insurance if applicable.

Section 4.1.7. Operator will contact XXXAIRPORTXXX and XXXATCXXX (if applicable) immediately to declare an emergency or advise of any unusual situation and intentions.

Section 4.1.8. Operator will ensure UAS operations do not impede, delay, or divert manned aircraft.

Section 4.2. Requirements: Airport

Section 4.2.1. Provide XXXOPERATORXXX notice of any airspace, obstacles, activities, common or known air or XXXAIRPORTXXX operations that will affect safe UAS operations.

Section 4.2.2. Coordinate communications requirements between XXXOPERATORXXX, XXXAIRPORTXXX, and XXXATCXXX if necessary.

Section 4.2.3. Ensure controls are in place to prevent runway incursions.

Section 4.2.4. Enable operator access to runway or taxiway surfaces to launch and recover the sUAS.

Section 4.2.5. Provide coordination, as required, with ATC (if applicable), airport stakeholders, and manned traffic that may include:

- i. Publish NOTAM-D 24-72 hours prior to sUAS operations.
- ii. Assign airport personnel as needed to augment operator operational safety.
- iii. Provide operator with communication(s) frequency.
- iv. Ensure operator or assigned airport personnel self-announce location, activity and other information pertinent to manned aviation. SAMPLE
“XXXAIRPORTXXX Traffic, unmanned aircraft, 400ft agl, operating on XXXAIRPORTXXX, parallel to centerline, XXXAIRPORTXXX Traffic.”
- v. Ensure operator has required authorization of XXXATCXXX and communication requirements are established.

Section 4.2.6. Provide operator information of any known scheduled manned aircraft operations.

Section 4.2.7. Notify operator if weather conditions fall below VMC.

Section 4.2.8. Notify operator of any known manned aircraft which enters the immediate vicinity of XXXAIRPORTXXX.

Section 4.2.9. Deny or delay sUAS operations which impact the safety of manned aircraft operation.

APPENDIX E - OTHER RESOURCES

1. Know Before You Fly: <http://knowbeforeyoufly.org/>
2. Unmanned Aircraft Systems (UAS) at Airports: A Primer; by the Transportation Research Board: <http://www.trb.org/Publications/Blurbs/173263.aspx>
3. Evaluating Airport Performance with the Integration of UAS; by the Transportation Research Board. This publication is forthcoming in Fall 2019.



APPENDIX F



Federal Aviation
Administration

DRONE Law Enforcement Response

Detect all available elements of the situation; attempt to locate and identify individuals operating the drone. (Look at windows/balconies/roof tops).

Report incident to the FAA Regional Operations Center (ROC). Follow-up assistance can be obtained through FAA Law Enforcement Assistance Program (**LEAP**) special agents.

Observe the UAS and maintain visibility of the device; look for damage or injured individuals. Note: Battery life is typically 20 to 30 minutes.

Notice features: Identify the type of device (**fixed-wing/multi-rotor**), its size, shape, color, payload (i.e., **video equipment**), and activity of device.

Execute appropriate police action: Maintain a safe environment for general public and first responders. Conduct a field interview and document ALL details of the event per the guidance provided by the FAA. faa.gov/uas/resources/law_enforcement/

Always follow agency policies: Take appropriate action based on the facts and circumstances of the incident and site/area specific laws and rules. The FAA's enforcement action does NOT impact ANY enforcement action(s) taken by law enforcement.

Local ordinances that may apply include, but are not limited to: Reckless endangerment, criminal mischief, voyeurism, inciting violence.



LAW ENFORCEMENT AND PUBLIC SAFETY



Understanding Your Authority with Drones

Law enforcement and other public safety agencies have an important role in protecting the public from unsafe and unauthorized drone operations. As a law enforcement officer, you are often in the best position to deter, detect and investigate unsafe or unauthorized drone operations.

UNSAFE AND/OR UNAUTHORIZED DRONE

The FAA's Law Enforcement Checklist helps you identify the necessary steps you need to take to respond to a situation involving an unsafe or unauthorized drone.

- **Detect** all available elements of the situation; attempt to locate and identify individuals operating the drone. (Look at windows/balconies/rooftops).
- **Report** the incident to the FAA Regional Operations Center (ROC). Follow-up assistance can be obtained through FAA Law Enforcement Assistance Program special agents.
- **Observe** the drone and maintain visibility of the device; look for damage or injured individuals. Note: Battery life is typically 20 to 30 minutes.
- **Notice** features: Identify the type of device (fixed-wing/multi-rotor), its size, shape, color, payload (i.e., video equipment) and activity of device.
- **Execute** appropriate police action: Maintain a safe environment for general public and first responders. Conduct field interviews; request proof of drone registration; document ALL details of the event per the guidance provided by the FAA.

Learn more at faa.gov/go/DronePublicSafety

Always follow your agency policies: Take appropriate action based on the facts and circumstances of the incident and site/area-specific laws and rules. Any action taken by the FAA should not preclude law enforcement from taking action to enforce state and local laws regarding drone operations. Local laws or ordinances that may apply include, but are not limited to: reckless endangerment, criminal mischief, voyeurism, interference with law enforcement and trespassing.

Document and provide the following information to the FAA:

- Identity of operators and witnesses (name, contact information)
- Nature of the operation (for fun, to support a business, governmental)
- Type of device(s) and registration information (number/certificate)
- Event location and incident details (date, time, place)
- Evidence collection (photos, video, registration information, device confiscation)

CONSIDERATIONS FOR DISRUPTING DRONE OPERATIONS

State and local law enforcement entities, private-sector stakeholders, and even individuals may be interested in methods for disrupting the operation of drones believed to pose a hazard to privacy, safety or security. However, the FAA cautions all non-federal entities against pursuing the testing, evaluation or use of technologies to detect and/or mitigate drone activity, whether involving kinetic or non-kinetic capabilities, without consulting legal counsel for a thorough evaluation of the legal risks.

December 2018



Federal Aviation Administration



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