Fairfax County Government

PROGRAM MANUAL

UNMANNED AIRCRAFT SYSTEMS (UAS)

Draft V2

Date: 1/2/2019

PROGRAM MANUAL PURPOSE

The purpose of this program manual for the Fairfax County Unmanned Aircraft Systems program is to provide a set of operational policies and procedures to promote the safe, effective, efficient, responsible, and lawful operation of Unmanned Aircraft Systems (UAS) and maintain community trust. This program manual applies specifically to public use of Unmanned Aircraft Systems by governmental entities and does not apply to civil use by our residents. This manual will be considered a living document and will be revised as required due to any legislative, regulatory, or policy revisions, best practices, or any change in the concept of operations.

Important aspects of this manual are the focus on the safety of the public and UAS flight crews; protecting individuals' privacy, civil rights and civil liberties; compliance with all applicable federal, state, and local laws, regulations, and policies; public information; data management; and operational and training requirements.

To demonstrate transparency and maintain community trust the Fairfax County UAS program will provide information about the program and missions on a dedicated County UAS webpage and notification to the public for any flights.

All Fairfax County UAS Part 107 certified employees and volunteers shall adhere to the guidelines in this program manual and any participating County agency requirements to maintain the highest level of standards while operating a UAS.

MISSION STATEMENT

The Fairfax County UAS program will provide an enhanced level of operational capability, safety, and situational awareness for first responders, other approved participating agencies, and decision-makers with relevant high quality imagery, data, and customized geospatial solutions using unmanned aircraft while continuing to maintain the public trust.

TABLE OF CONTENTS

SECTION 1: OVERVIEW

UNMANNED AIRCRAFT SYSTEMS (UAS) PURPOSE

Unmanned Aircraft Systems (UAS) provide enhanced operational capability, safety, and situational awareness for first responders, other staff or volunteers, affiliated partners, and the community. They can operate in many types of environments or critical incidents, natural or manmade, which might be hazardous to the safety of first responders or others. UAS provide a unique, viable, safe, versatile, supplemental tool for incident commanders and first responders. UAS also have a cost benefit compared to manned aircraft. UAS is not a replacement for manned aircraft that have a different set of capabilities, but for some missions UAS provide first responders with a tool that can access areas where manned aircraft cannot fly due to weather or other safety regulations. UAS provides a viable, safe, and supplemental asset to other manned aircraft assets.

ANNUAL EXECUTIVE SUMMARY

The Fairfax County UAS Program Manager, in coordination with the UAS Steering Committee, will develop an annual executive summary to highlight program accomplishments, outline mission summaries, and provide information about the number of deployments, hours flown, support for other localities or partner agencies. Any significant revisions to this manual or other relevant policies will also be identified in the summary. This summary will be posted to the County website and will also be available to those persons without electronic access upon request

PUBLIC EDUCATION AND INVOLVEMENT

To be transparent and maintain community trust, the public must be educated and informed about the UAS program, including purpose of the program and equipment, capabilities, and policies, including safety protocols and safeguards to protect individuals' privacy, civil rights, and civil liberties. This program will include the following:

- Provide presentations at community meetings, town halls or special events. Invite media representation as possible.
- Provide public demonstrations to showcase the County's capability and provide public information and education on the UAS program.
- Establish and maintain a UAS webpage for transparency and to provide the public information on policy, equipment, training, mission types, and FAQs.
- Fairfax County Park Authority sponsored beginner classes.
    - Special events and programs focusing on safety and UAS philosophy.
    - Both indoor and outdoor flight opportunities.

COUNTY UAS WEBPAGE

A key County principle is to provide transparency and information to the public. As part of a multi-tiered approach to this principle the UAS program will maintain a dedicated County webpage that will include the UAS Program Manual, policy and procedures, missions flown, locations where you can fly your personal drone and program updates.

Website: https://www.fairfaxcounty.gov/uas

PUBLIC COMMENT / REQUESTS

An email account has been created to provide access to the County UAS program for the public to ask questions about the program, offer feedback or suggestions, or notify of a complaint. The UAS Program Manager will be responsible for monitoring this email account and responding or coordinating responses with appropriate agencies.

Email address: UAS@fairfaxcounty.gov

PUBLIC ALERTING / NOTIFICATION

A UAS notification group has been created in Fairfax Alerts that will provide the public the opportunity to sign up for notifications for missions or training flights. These alerts will be sent geo-coded only to the immediate area in which flight operations which will be conducted within line of sight of the pilot in command and any visual observer, will be taking place. Other existing alternative alert/notification methods may be used in certain instances, particularly if an emergency or critical incident is occurring. The respective agency program coordinator or incident commander will be responsible for ensuring timely public notification.

MISSION PROFILES

Listed below are examples of the types of missions for which UAS systems may be deployed. This list is not exhaustive, and other types of missions may be flown provided they follow County and agency policies, and approved by the incident commander or remote pilot in command.

- Damage Assessment (Natural or Man-made event)
  - Structural, flood related, environment, transportation, pipeline breaks, and rail incidents.
  - Enhanced search grids through onboard software.
- Dive Team Support
  - Reconnaissance of the area for best access points into the water.
  - Potentially identify the location of a missing vehicle/person (shadows, tire marks).
  - Scene awareness to identify potential hazards to responders.
- Search and Rescue Missions (individuals, aircraft, vehicles and objects)
  - Search for endangered or critical missing individuals.
  - Provide a large-scale overview of the search area.
  - Identify potential hazards for search teams and vehicles.
  - Allow for limited tracking of search teams in an area.
  - Provide photographic and video capability and analysis.
  - Scene awareness and life safety to identify potential hazards to responders.
- Fire Scene Management
  - Overflight of structure fires (residential and commercial) by providing a 360-degree view for the incident commander.

- Aerial management and coordination for large outside fires to help determine the extent of coverage and identify structures, exposures or another infrastructure that may be impacted.
- Assist in helping account for personnel on the fire ground.
- Provide real-time aerial video footage of large scale incidents.
- Assist in evaluating hazards, structure integrity and helping to ensure scene safety.

- Fire / Explosives Investigations
  - Assist fire investigators in assessing and documenting fire scenes for an overall scope of the scene.
  - The UAS can provide detailed overhead views of large fire scenes from multiple angles and is safer than placing aerial ladders in multiple locations to get aerial photos. This is both a time saving and safety issue. The UAS can also zoom in or fly in to get extreme close-up photos and distant scene photos that would normally require the use of the County Police's helicopter unit or other aviation assets.
  - Assist Blasting Enforcement Officer in developing requirements for blast site safety zones for commercial blasting projects.
  - Assist in post blast investigations in locating blast scene radius and areas impacted by an explosion.
  - Explosive ordinance detection (EOD) and security.
- Hazardous Materials
  - Infrared (IR) Forward-Looking Infrared (FLIR) capabilities of the UAS in tracking flows of hazardous materials on waterways during a hazardous materials incident.
  - Assist with hazard identification and development of safety measures.
  - Provide area reconnaissance information without placing personnel in potentially hazardous locations:
    - Assist in determining hazardous materials involvement.
    - Determine potential run-off/movement of hazardous materials.
    - Ensure area is clear of the public.
- Urban Search and Rescue (USAR)
  - Assist with area reconnaissance including urban, suburban and rural locations.
  - Assist with personnel tracking and accountability in wide area search.
  - Provide real-time aerial video footage of rescue operations including:
    - Trench rescue.
    - Structural collapse.
    - Swift water rescue.
- Plan Development
  - Assist the Fairfax Joint Local Emergency Planning Committee (FJLEPC) staff in developing site specific Hazardous Materials Emergency Response Plans (HMERP) for large critical hazard facilities and surrounding communities. Examples are waste and fresh water treatment facilities, and petroleum tank farms that cover many acres and are adjacent to residential and/or commercial communities and environmentally sensitive areas.

- Infrastructure
    - Assess hazardous pipeline infrastructure within Fairfax County to evaluate possible leaks and impacts during incidents or pipeline repair projects. This will assist in locating possible critical areas, communities, and sensitive environmental areas that could be impacted by hazardous chemicals leaks or be impacted by normal repairs and inspections of the pipelines.
    - Critical Infrastructure Assessment (bridges, antenna towers, stream and water management).
- Public Safety
    - Provide aerial mapping support to assist in crash reconstruction.
    - Provide aerial mapping, photographing and analyzing crime scenes.
    - Provide real-time traffic impact assessment and 3D mapping due to vehicle crashes or significant events (such as road backups/alternate routes of travel, weather, or evacuations).
    - Provide real-time situational awareness during managed deer hunts and sharpshooting operations to help provide an additional layer of protection for those involved and surrounding properties and residents.
    - Enhanced non-surveillance operations that will provide officer safety during crime scene searches, or critical incidents such as hostage or barricade events.
    - Perimeter security.
    - Forensic documentation.
    - Bridging digital communications and observations.
- Geospatial Data Acquisition
    - Orthomosaics.
    - Elevation Surfaces.
    - Digital Surface Models.
    - 3D Point Clouds.
- Public recreational and business programs, training and clinics
    - Fairfax County Park Authority hosted classes/events/programs.
    - Multiple venue opportunities for County residents to fly (indoor/outdoor).
    - Virtual reality, children's camps and UAS racing.
- Public Relations
    - High definition video and photographic capability for media events.
    - Enhancements to brochure and other marketing tools.

UAS EQUIPMENT CAPABILITIES

Each of the aircraft used in the UAS program brings a variety of technology and flight capabilities. Enhanced capabilities include:

- Operate in environments that are hazardous or potentially hazardous to personnel
- Provide High Definition video and photographs
- Thermal imaging (FLIR)

- Carry an external payload (flotation device, radio, medication, automated external defibrillator (AED)
- Operate in virtually all weather conditions
- Take off and land autonomously
- Onboard passive collision detection
- Autonomous return to home during loss of signal or reduced battery

PROHIBITED USES

The UAS program shall not be used for the following:

- The UAS shall not be weaponized or otherwise modified to deploy any projectile, chemical agent, or electric shock analogous to that of an electronic control weapon.
- To conduct unauthorized surveillance activities, including crowd monitoring
- To target a person based solely on individual characteristics, such as, but not limited to race, ethnicity, gender, national origin, religion, or disability.
- To coerce, harass, intimidate or discriminate against any individual or group.
- No UAV shall be operated in violation of the United States Constitution, US Federal Law, or the Virginia State Code. When a search warrant is required by law, and no warrant exception exists, flight is prohibited unless authorized by a search warrant signed by a magistrate.
- UAS shall not be used for routine patrol operations.
- UAS shall not be used for random surveillance operations.
- UAVs shall not be flown in conditions that exceed the manufacturer's recommended limitations, including range, ceiling, wind strength, and battery charge.
- UAV operations are prohibited in Class B airspace unless specific authorization is granted by the FAA.
- Unless authorized by the FAA, only one UAV shall be operated in a defined incident perimeter, by a single control station, and by one pilot at a time.
- Daisy-chaining observers to extend line-of-sight is prohibited.
- UAS shall not be intentionally used to gather intelligence related to First Amendment protected speech, associations or activity.
- Officers shall not intentionally record confidential information using the UAS. Prior to the release of any recording containing this information it must be redacted by a member of the Media Relations Bureau FOIA Compliance Section in accord with General Order 402, Release of Information.
- Officers shall only use UAS for legitimate law enforcement purposes while on any public or private school grounds.
- UAS shall never be used to conduct personal business of any type.
- To intentionally pursue, harass, disturb or destroy wildlife.
- Authorized operators should never leave an unauthorized person in control of a UAV while the device is powered on. If the PIC must leave the operating area, the power to the aircraft should be shut down and the controls deactivated.

- UAVs shall not be used to collect or use data in any manner that would harass, coerce or discriminate against any person(s) based upon their ethnicity, race, gender, national origin, religion, sexual orientation, or gender identity.
- In general, employees shall not record with a UAV during the following circumstances:
    - Surreptitious listening or recording of conversations to which no party has consented or no search warrant exists
    - Circumstances which could compromise law enforcement tactical and/or strategic policies, procedures, or plans;
    - Images or audio of undercover officers and confidential informants.

CONCERNS / COMPLAINTS

If a member of the public has a concern or would like further information about the program or a specific flight or UAS operator, that request will be handled first through the UAS Program Manager and then followed up with the respective Agency Program Coordinator as needed.

Any complaint that alleges a privacy, civil rights, or civil liberties violation, or other type of complaint, will be handled in accordance with established County or respective agency policy. Efforts will be made to respond to a complaint within 48 hours of notification unless the initial contact falls during a weekend or holiday. All requests, questions or comments should be directed through UAS program email account: UAS@fairfaxcounty.gov

SECTION 2: REGULATORY

All flights, regardless if operational or training, shall comply with all applicable federal, state, and local laws and regulations. All flights will be conducted following all applicable FAA regulations pertaining to the operations and certification of small Unmanned Aircraft Systems including Title 14 CFR and Part 107.

Fairfax County will conduct UAS flight operations under either a Federal Aviation Administration (FAA) Certificate of Authorization (COA) or as a Civil Operator. This COA grants permission to fly within specific parameters established by the FAA.

In order to fly in controlled airspace and comply with Part 107, prior to any flight, Fairfax County will be required to obtain airspace authorization.

All Federal Aviation Administration (FAA) advisories, circulars, orders, bulletins or notices will be reviewed by the program manager. Any changes that may impact the Fairfax County program will be updated to this program manual and the changes distributed per the record of manual changes section.

ADDITIONAL FAA COMPLIANCE

The program will also comply with any additional information or regulatory requests from the Federal Aviation Administration (FAA) to include, for example:

- Any document, record, or report on:
  - Aircraft registration.
  - Flight records.
  - Incident reports.
  - Deviation from regulations.
  - Authorization from air traffic control (ATC).
  - Waiver from specific provisions (as appropriate).
- FAA may require upon request, to test or inspect:
  - Aircraft.
  - The remote pilot-in-command or person manipulating the flight controls.
  - Visual observer.
- Report any accident within 10 days that meets the following criteria:
  - Causes serious injury to any person or who has a loss of consciousness.
  - Damage to any property, other than the aircraft, greater than $500.

Under every circumstance in which the FAA becomes involved, the Pilot-In-Command shall notify their respective Agency Program Coordinator within 24 hours. The Agency Program Coordinator must make appropriate notification to their agency chain of command and the UAS Program Manager.

In the event of any UAS accident, regardless if it meets the FAA threshold for a reportable accident, the Pilot-In-Command must notify their Agency Program Coordinator, UAS Program Manager, and Fairfax County Risk Management Division.

REPORTING REQUIREMENTS

Typical requirements found in a COA flown under Public Aircraft Operations, The Fairfax County UAS program COA may have additional or less requirements based on the FAA requirements.

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

INCIDENT/ACCIDENT/MISHAP REPORTING

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

- All accidents/mishaps involving UAS operations where any of the following occurs:
    - Fatal injury, where the operation of a UAS results in a death occurring within 30 days of the accident/mishap
    - Serious injury, where the operation of a UAS results in:
        - Hospitalization for more than 48 hours, commencing within 7 days from the date of the injury was received;

        - A fracture of any bone (except simple fractures of fingers, toes, or nose);
        - Severe hemorrhages, nerve, muscle, or tendon damage;
        - Involving any internal organ; or
        - Involves second or third-degree burns, or any burns affecting more than 5 percent of the body surface.
    - Total unmanned aircraft loss
    - Substantial damage to the unmanned aircraft system where there is damage to the airframe, power plant, or onboard systems that must be repaired prior to further flight
    - Damage to property, other than the unmanned aircraft.
- Any incident/mishap that results in an unsafe/abnormal operation including but not limited to
    - A malfunction or failure of the unmanned aircraft's on-board flight control system (including navigation)
    - A malfunction or failure of ground control station flight control hardware or software (other than loss of control link)
    - A power plant failure or malfunction
    - An in-flight fire
    - An aircraft collision involving another aircraft.
    - Any in-flight failure of the unmanned aircraft's electrical system requiring use of alternate or emergency power to complete the flight
    - A deviation from any provision contained in the COA
    - A deviation from an ATC clearance and/or Letter(s) of Agreement/Procedures
    - A lost control link event resulting in
        - Fly-away, or
        - Execution of a pre-planned/unplanned lost link procedure.
    - Initial reports must contain the information identified in the COA On-Line Accident/Incident Report.
    - Follow-on reports describing the accident/incident/mishap(s) must be submitted by providing copies of proponent aviation accident/incident reports upon completion of safety investigations.
    - The above procedures are not a substitute for separate accident/incident reporting required by the National Transportation Safety Board under 49 CFR Part 830 §830.5.

For other than Department of Defense operations, this COA is issued with the provision that the FAA be permitted involvement in the proponent's incident/accident/mishap investigation as prescribed by FAA Order 8020.11, Aircraft Accident and Incident Notification, Investigation, and Reporting.

SECTION 3: ADMINISTRATION

STEERING COMMITTEE

A Fairfax County UAS Steering Committee will be formed and meet at least once every three (3) months. The committee will report to the Coordinator, Office of Emergency Management, and the Deputy County Executive for Public Safety, and will include representatives from the Office of Emergency Management, Fire and Rescue Department, Police Department, Sheriff's Office, Office of the County Attorney, Risk Management Division, Department of Information Technology, Office of Public Affairs, Park Authority, Fairfax County resident and any other participating county agency possessing or using UAS technology.

The committee will be responsible for supporting the UAS Program Manager, administering the County UAS program, developing the annual executive summary, ensuring that the program complies with all applicable federal, state, and local laws, regulations, and policies, ensuring coordination among participating agencies, updating the program manual, and reviewing best practices and new technology.

UAS PROGRAM MANAGER

The UAS Program Manager is selected by the UAS Steering Committee, serves for a period of 2 years, and is responsible for the oversight of the Fairfax County UAS program., The Program Manager works closely with all the agency program coordinators.

Position Requirements

- Current Fairfax County government employee.
- Current Remote Pilot Certificate issued by the FAA with small UAS rating.

Duties

- Member of the UAS Steering Committee.
- Develop the annual Executive Summary.
- Coordinate all County UAS training.
- Manage and update the UAS Program Manual.
- Coordinate the Public Program Evaluation Program.
- Provide updated information to all agency program coordinators.
- Manage the County UAS email account and webpage.
- Maintain FAA certifications.
- Liaison with FAA, Virginia Public Safety UAS Council, Commonwealth of Virginia Unmanned Aerial Systems Sub-Panel, and the Washington Metropolitan Council of Governments (COG).
- Participate in local/regional committee meetings.
- Coordinate with external partners.
- Work closely with County senior leadership.

- Maintain flight proficiency as prescribed in this program manual.
- Maintain and update the County FAA Certificate of Authorization (COA).

AGENCY PROGRAM COORDINATORS

Each participating agency shall designate an Agency Program Coordinator to support the UAS Program Manager and coordinate an agency's UAS operations, training, documentation, resource management, and data management. The UAS Program Manager shall maintain a list of current Agency Program Coordinators.

Position Requirements

- Current Fairfax County government employee.
- Designated by the agency director or designee.

Duties

- Member of the UAS Steering Committee.
- Manage an agency's UAS program in coordination with the UAS Program Manager.
- Coordinate agency training and all ensure operational guidelines are followed.
- Disseminate revisions to the UAS Program Manual to all agency flight crews and revise any respective agency policies as needed.
- Keep current on best practices and technology and make appropriate recommendations.
- Ensure that all aircraft updates and enhancements are downloaded.
- Ensure that data management/access and retention guidelines are being followed.
- Ensure preventive/operational maintenance is performed to standards and documented.
- Maintain copies of all training certificates, flight logs and maintenance logs.
- Respond to County program email as applicable.
- Responsible to ensure any respective agency standards of operating procedures, general orders, or other policy is updated.
- Conduct indoctrination training to new UAS members.
- Oversee procurement of UAS equipment.
- Conduct audits of agency flight and maintenance logs semiannually.

PROGRAM MANUAL REVISIONS

The UAS Program Manual will be reviewed periodically as required to incorporate any revisions due to federal, state, or local legislative, regulatory, or policy revisions, operational assessments, or best practices. At a minimum, the UAS Program Manual will be reviewed and updated, as needed, annually. Revisions will include additions of new or supplementary material, deletions of outdated information or changes in industry best practices. No proposed revision should contradict or override authorities or other plans contained in statute or regulation. All requests for revisions will be submitted to the Fairfax County UAS Steering Committee for coordination, approval, and distribution. Any department or agency may also propose revisions to the UAS

Program Manual. Program manual revisions shall be reviewed and approved by the Deputy County Executive for Public Safety.

NOTICE OF REVISION

Notices of revision to the UAS Program Manual will be prepared and distributed by the UAS Steering Committee for all revisions made outside of the scheduled revision process. The notice of revision will include the effective date, revision number, subject, purpose, and action required by the UAS program team. The notice of revision will include revised pages for replacement within the UAS Program Manual.

Sample Record of Revision Form

Number	Date	Date Entered	Entered By
1.1	DD/MM/YEAR	DD/MM/YEAR	First Last

PUBLIC PROGRAM EVALUATION

To ensure that the Fairfax County UAS program continues to evolve and maintain a high level of transparency the UAS Steering committee will schedule an evaluation of the UAS program and policies every two years. Representatives from the steering committee and community will participate in this review process. The review process will include the following:

- Summary of the UAS program.
- Review the UAS program and polices.
- Review current Virginia state legislation on UAS and evaluate the need to make changes or recommended additions.
- Establish a 30-day public comment period.
- Develop an executive summary of the changes that were recommended and made.

- Update the UAS program manual.
- Update and perform training as required.

After the process, has been completed, a copy of the summary and the updated UAS program manual will be published on the Fairfax County UAS webpage.

REQUIRED REPORTS / CERTIFICATIONS

The Fairfax County UAS program has specific reporting and certification requirements, to include:

- Annual review of the pilot and maintenance logs.
- Annual maintenance review of all aircraft, controllers, and spare parts.
- Annual Executive Summary.
- Applicable FAA and National Capitol Region waivers.
- Annual review and update of the UAS Operations Manual.
- Annual review of all training conducted.
- Quarterly update to county webpage.
- Biennial FAA Remote Pilot knowledge test renewal.

The UAS Program Manager shall have the responsibility, in coordination with the Steering Committee, to ensure the timely completion of these reporting requirements.

SECTION 4: PROTECTION OF PRIVACY, CIVIL RIGHTS, AND CIVIL LIBERTIES

UAS technology is an emerging field, particularly for use in public safety. Although the potential benefits and enhanced capabilities are substantial, concerns exist that UAS may be misused or abused, particularly by law enforcement agencies. UAS operators, observers, and support staff shall ensure the protection of individuals' civil rights, civil liberties and reasonable expectations of privacy in any UAS deployment. To accomplish this primary goal:

- All agency use under the County UAS program will comply with the Code of Virginia, to expressly include § 19.2-60.1., set forth below. This code section prohibits the use of this technology by law enforcement or regulatory agencies with enforcement authority without a valid search warrant except in carefully defined circumstances. Prior to implementing an agency UAS program, the Police Department will develop and maintain training for supervisors and commanders relevant to this code section to ensure compliance. Other participating entities with authority to enforce criminal law or regulatory violations, such as Fire Marshals, will also develop and maintain relevant training, and be required to also comply with the provisions of § 19.2-60.1. Any allegations or violations will be reported and investigated in accordance with County and department policies.
- All personnel operating a County UAS shall take every reasonable precaution to avoid inadvertently recording or transmitting images of individuals and properties unrelated to the mission. To the maximum extent possible, onboard cameras shall be directed toward the area of interest and away from uninvolved individuals or properties to minimize such inadvertent recording or transmission of images.
- Unless required by an articulable operational purpose, the recording of data imagery shall not begin until the UAS has arrived at the location designated for the mission.
- All personnel operating a County UAS, including non-law enforcement or regulatory personnel, shall be knowledgeable about individual privacy rights, civil rights and civil liberties and shall not intentionally record or transmit images in any location where a person would have a reasonable expectation of privacy unless authorized pursuant to Va. Code § 19.2-60.1.
- Whenever possible, the agency deploying the UAS or the incident commander should rely on the UAS live feed transmission rather than recording.
- All video and still images will be maintained in strict compliance with Fairfax County and the Library of Virginia policies and procedures. Recorded data should not be retained beyond any period required by Virginia law. See Appendix A for retention periods applicable to certain recordings.
- All persons who have access to any County UAS storage medium must have passed a County approved background check. Agencies will maintain a list of all persons and organizations who have regular access to the storage medium and maintain a log of every access to the storage medium by individuals who do not have regular access.

- The video is stored on board the aircraft. The video transmission from the aircraft uses an encrypted data link. The video is viewable by the operator of the UAS utilizing a monitor at the ground control station.
- The UAS Program will employ reasonable technological or administrative safeguards to ensure that images incidentally or inadvertently recorded are not misused, disseminated or viewed unnecessarily to protect individual rights.
- The County UAS training program shall include topics on Va. Code § 19.2-60.1, the protection of individuals' privacy, civil rights, and civil liberties, FOIA, and data dissemination, storage, retention, and security requirements.
- The users of UAS recorded data are responsible for ensuring dissemination of data is authorized, is in compliance with County policies and Virginia law, including the Virginia Data Collection and Dissemination Practices Act and the Virginia Freedom of Information Act (VFOIA) and is consistent with the recipients' legitimate need to know and authority to receive such data. Any further dissemination by a data recipient will require the data owner's prior consent.
- Collected data will not be indexed or otherwise arranged so as to be searchable by an individual's name, personal number or other identifiable particulars. The County UAS program will not use facial recognition technology to ascertain the identify of individuals found in recorded images.
- The UAS webpage and program email account will be maintained and monitored to provide information, and address any public questions, concerns or recommendations.
- The UAS Steering Committee has been established to review and update UAS procedures and training, identify new technologies, review best practices, revisions to UAS related laws and regulations, and any emerging case law or court decisions.
- The County UAS program will operate strictly in compliance with all applicable federal, state, and local laws, regulations, and policies, and in a responsible and ethical manner. All operations will be balanced to accomplish the mission (e.g. emergency or life safety) while protecting privacy rights, civil rights, and civil liberties.
- The County UAS program will not use, retain, or disseminate collected data in any manner that would violate any Constitutional rights or in any manner that would discriminate against persons based upon, but not limited to, race, ethnicity, gender, national origin, or religion.
- No video or photographs taken by a County-owned and operated UAS will be used for personal use. Any requests for appropriate County use, such as presentations or publications, must be approved by the UAS Program Manager and the data owner (respective County agency). The Program Manager may seek guidance, if needed, from the Office of the County Attorney. No inadvertent or incidental personal images or information will be permitted to be used under this section.

CODE OF VIRGINIA

During the 2013 General Assembly Session, House Bill 2012 imposed a moratorium on the use of unmanned aircraft systems by law-enforcement agencies until July 1, 2015, with certain exceptions. This legislation also required the Department of Criminal Justice Services, in

consultation with the Office of the Attorney General and other agencies, to develop model protocols for the use of unmanned aircraft systems by law-enforcement agencies, resulting in House Document No. 12, Protocols for the Use of Unmanned Aircraft Systems by Law-Enforcement Agencies, published in 2013. Although the moratorium for use by law-enforcement has been lifted, House Document 12 was one of the foundational pillars to inform this program manual.

All agency use under the County UAS program will comply with the Code of Virginia, to expressly include § 19.2-60.1., listed below. Prior to implementing an agency UAS program, the Police Department will develop and maintain training for supervisors and commanders relevant to this code section to ensure compliance. Other participating entities with authority to enforce criminal law or regulatory violations, such as Fire Marshals, will also develop and maintain relevant training, and be required to also comply with the provisions of § 19.2-60.1. Any allegations or violations will be reported and investigated in accordance with County and department policies.

§ 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.

2015, cc. 764, 774; 2018, cc. 419, 546, 654.

MIGRATORY BIRD TREATY ACT

The Migratory Bird Treaty Act makes it illegal to take, possess, import, export, transport, sell, purchase, barter, or offer for sale, purchase, or barter, any migratory bird, or the parts, nests, or eggs of such a bird except under the terms of a valid Federal permit. Migratory bird species protected by the Act are listed in 50 CFR 10.13.

Webpage:
https://www.fws.gov/birds/policies-and-regulations/laws-legislations/migratory-bird-treaty-act.php

ADDITIONAL LEGISLATION

Amber Alert	Va. Code Ann. § 52-34.3
Senior Alert	Va. Code Ann. § 52-34.6
Blue Alert	Va. Code Ann. § 52-34.9
Accident Investigation	Va. Code Ann. § 46.2-373

SECTION 5: DATA MANAGEMENT

POLICY

Fairfax County would use unmanned aircraft to capture imagery and video data only to the extent necessary to assist or support the flight crew or affiliated personnel in planning, response, and recovery efforts, or for training purposes. The method of acquisition may include the utilization of commercial off-the-shelf camera payloads, advanced thermal imaging devices, multi-spectral sensor technologies and video capture equipment that are placed, as part of a UAS, for remote sensing purposes. The more important function for most UAS missions is the live video feed capability for the flight crew, Incident Commander or other authorized personnel to view.

All images and video collected using unmanned aircraft will be managed in compliance with County data collection and dissemination policies. County record retention procedures are derived from the requirements outlined in the Library of Virginia archives, records and collections services records retention and disposition schedules for localities.

The Library of Virginia publishes these Schedules pursuant to the Virginia Public Records Act, Va. Code Ann. §§ 42.1-76 through -91 of the Code of Virginia:
http://www.lva.virginia.gov/agencies/records/sched_local/index.htm

METHODS

IMAGES – Any images captured during flight are stored as data in the UAS internal storage medium. The storage medium is inserted or enabled during the pre-flight process, securely attached to the aircraft while in flight, and removed or disabled after each flight.

VIDEO – Real-time or near real-time video, captured and or distributed via electronic means, is stored on board the aircraft. The video transmission from the aircraft uses an encrypted data link. The video is viewable by the operator of the UAS utilizing a monitor at the ground control station. The video is also distributed to external monitors by cable or other methods to on-scene personnel.

PROTECTION

To further safeguard any imagery data collected during a flight operation the following will be strictly adhered to:

- The storage medium will be handled only by the UAS pilot or observer.
- The UAS pilot or observer will secure the storage medium.
- Should the storage medium (memory card) need to be transferred to another County agency, a transfer document will be signed by both the UAS pilot or observer and the requestor. The storage medium protection requirements then transfer to the requesting/receiving agency.

- Authorized Fairfax County personnel will be granted permission and access to view any live video stream. In the event of an Emergency Operations Center (EOC) operation, those County agencies and affiliated trusted partners, such as Virginia Department of Transportation (VDOT), the Virginia Department of Emergency Management (VDEM), the Red Cross, or other agencies during an EOC activation will be permitted to view the live video.
- At **no time** will the public be allowed to view or record the live streaming imagery unless there has been consent by the on-scene incident commander and UAS Pilot-In-Command. An example where live video may be shown could be the impact to the highway system or other transportation sector with significant impact to the public.
- Viewers of the live video stream in an EOC or other operational environments are not authorized to record, distribute or disclose information gained from viewing the video stream without prior approval by the UAS Program Manager, who may consult as needed with the Deputy County Executive for Public Safety or the Office of the County Attorney.
- Data imagery maintained by a County agency will not be disseminated to another information system without specifying requirements for security and usage, including limitation on access thereto, and without receiving reasonable assurances that those requirements and limitations will be observed.
- County agencies maintaining imagery data will keep a list of all persons or organizations having regular access to such data.
- County agencies maintaining imagery data will keep a complete and accurate record, including identity and purpose, of every access to such data by persons or organizations not having regular access authority. Such record will be maintained for three (3) years or until such time as personal information, including photographs and video of individuals, is purged, whichever is shorter.

FREEDOM OF INFORMATION REQUESTS

The Virginia Freedom of Information Act (VFOIA), Va. Code Ann. §§ 2.2-3700 through 3714, allows residents of Virginia open access to public records in the custody of a public body or its officers and employees, and open entry to meeting of public bodies where the business of the people is being conducted. Requests for UAS data will be forwarded to the agency housing the data and treated as a public records request.

SECTION 6: OPERATIONS POSITIONS

CHIEF PILOT

The UAS program Chief Pilot is responsible for the development and performance of the training program for all UAS operations. The Chief Pilot shall have authority over the pilot and visual observer programs and ensure that all team members are trained, licensed, and operational as needed.

Position Requirements

- Current Fairfax County government employee.
- Current Remote Pilot Certificate issued by the FAA with small UAS rating.

Duties

- Member of the UAS Steering Committee.
- Oversee the Fairfax County UAS training program.
- Perform proficiency check flights of all pilots and visual observers.
- Maintain all training records for flight crews.
- Responsible for disseminating any legislative or regulatory revisions to flight crews countywide.
- Provide ground school and flight training.
- Coordinate after action conferences as needed.
- Coordinate any manufacturer updates to aircraft or software version enhancements.
- Ensure that all flight plans and other documentation is filled out and maintained.

PILOT-IN-COMMAND (PIC)

The agency director must approve any request for an agency employee to become trained as an FAA Part 107 pilot. Once approved, the candidate will work directly with the UAS Chief Pilot to participate in both ground and flight school and familiarization training. The Pilot-In-Command will be responsible for flying the aircraft in a safe and approved manner and will assume overall responsibility for all safety related matters.

Position Requirements

- Current Fairfax County government employee.
- **Current** Remote Pilot Certificate issued by the FAA with small UAS rating.

Duties

- Member of the UAS Steering Committee.
- Available to respond to fly agency approved missions.
- Responsible for ensuring safety of each flight operations.

- Final authority in determining if flight operations will take place.
- Ensuring that pilot log book, aircraft logbook and other paperwork is completed for each mission.
- Notify the UAS Program Manager of any deployment of the UAS with flight date, time and location.
- Ensure light conditions complies with all applicable FAA rules and regulations, including flight within line of sight requirements.
- Follow checklists for each flight regardless if training or actual mission.
- In the absence of a safety officer on the scene, the PIC will be responsible for ensuring that all safety protocols are followed prior to, during, and after each flight.

VISUAL OBSERVER (VO)

The Visual Observer is responsible for supporting the Pilot-In-Command to help ensure all UAS operations are done in a safe, protected, and effective manner. All flight operations, operational or training, shall, at a minimum, have both a Pilot-In-Command and a Visual Observer.

Position Requirements

- Current Fairfax County government employee.
- Remote Pilot Certificate with small UAS rating.

Duties

- Member of the UAS Steering Committee.
- Maintain an unaided visual line of sight any time the aircraft is airborne.
- Ensure the takeoff and landing zones, and surrounding area, are clear and safe of any public or other hazards.
- Coordinate as needed with the Incident Commander via in-person, voice, or other communication modes.
- Focus 100 percent of attention on the aircraft once airborne.
- Ensure that there are no potential conflicts in the sky such as birds, aircraft, wires or trees.

SAFETY OFFICER (SOFR)

If available, a Safety Officer is also responsible for overall UAS mission safety. In coordination with the Pilot-In-Command, and after evaluating safety risk factors, the Safety Officer shall have the final determination as to whether or not to commence a mission. While the Safety Officer will continue to monitor safety for the duration of a mission, and provide input to the PIC, once airborne the PIC has final authority to continue or discontinue the flight of the UAS.

If no Safety Officer is available or assigned to a mission the Pilot-In-Command will assume the role. Regardless of any of the duties outlined, any crew member participating in the mission has the responsibility to provide critical safety information to the PIC both before and during the flight.

Position Requirements

- Current Fairfax County government employee.
- Completed the Safety Officer course.

Duties

- Member of the UAS Steering Committee.
- Responsible for ensuring safe UAS operations.
- Assist in conducting a hazard risk assessment prior to any flight.
- Assist in debriefing missions and training sessions with emphasis on safety concerns and issues.
- Serve as a crew member as needed.

SECTION 7: SAFETY

POLICY

Safety first shall be an overarching priority and philosophy for the County UAS program. This program is committed to providing a safe environment for the public and flight crews and to ensure flight operations are performed in a safe, secure, responsible, lawful, and ethical manner. To mitigate risks, each flight crew shall comply with the requirements of this program manual, safety protocols, all applicable federal, state, and local laws, regulations, and policies, and follow all recommended manufacturer guidelines for each operation. The goal is to have zero accidents or injuries. Guiding safety principles include:

- All flight crew members must recognize that there is still an element of risk during each mission, and focus on risk assessment and mitigation.
- Regardless of assigned duties, all crew members have a primary duty to safety considerations, and the authority and responsibility to act immediately to notify and warn others and to suspend operations.
- All flight operations are to comply with the UAS program guidance, applicable laws, regulations, or policies, and any agency specific policies.
- Risk assessment and mitigation are not just pre-flight activities, but must continue during a mission.
- Unnecessary risks shall not be taken.
- Any identified safety hazard, whether procedural, operational, or maintenance related shall be corrected as soon as possible.
- Additional safety suggestions or recommendations may be made to the UAS Chief Pilot or Program Manager for consideration.
- Performance of regular audits of safety policies, procedures, and practices.
- Research, monitor, review, and incorporate, as appropriate, any emerging UAS safety best practices.

MEDICAL FACTORS

Every member of the flight crew shall adhere to the following guidelines as outlined by the FAA (Illness, Medication, Stress, Alcohol, Fatigue and Eating - IMSAFE).

- Pilots and observers shall only deploy the UAS when rested and emotionally prepared for the tasks at hand.
- The safety rule is to not act as a pilot or observer when suffering from any physical illness, exhaustion, or emotional problems which can seriously impair judgment, memory and alertness. All crew members are expected to “stand down” when these or any other factors could reasonably be expected to adversely affect their ability to perform flight duties.
- A self-assessment of physical condition shall be made by all members during pre-flight activities.

- Performance can be seriously impacted by prescription and over the counter drugs. All flight crew members are responsible to self-monitor their condition and to report to their respective Agency Program Coordinator or the Program Manager when they are unable to participate safely. If it is determined that any medication taken could hamper a pilot or observer that member shall be prohibited from the deployment or exercise.
- No member shall act as a pilot or observer within eight hours after consumption of any alcoholic beverages, while under the influence of alcohol, or while having an alcohol concentration of 0.04 as per Federal Aviation Regulation (FAR) 91.17.

RISK ASSESSMENT AND MITIGATION

Safety requires effective practices in managing multiple risk factors to include, but not limited to, the aircraft, environment, and the human component. The use of small unmanned aircraft being placed into service will always have some level of risk. However, it is important to always promote a zero-accident and safety-first philosophy and reduce and mitigate risks by doing the following:

- All UAS crew members shall review safety and operations checklists prior to operations.
- All UAS crew members shall be briefed before each flight.
- Ensure that all pilots have the required training and the necessary skill level to safely execute the mission assignment.
- Follow all preflight procedures to include:
    - Weather assessment.
    - Airspace assessment.
    - Aircraft assessment and preflight checklist.
    - Assessment and accounting of personal condition.
- Operate to the extent possible in open and clear areas and within line of sight of the pilot in command and any visual observer.
- After each flight, ensure the following:
    - Post flight check lists are completed.
    - Aircraft and pilot flight logs are completed.
    - Maintenance of the aircraft is documented.
    - Conduct a hot-wash of the mission to identify potential issues and highlight positive actions.
- Ensure that the necessary safety equipment is on hand prior to flight departure:
    - Fire extinguisher and/or sand.
    - First-aid kit.
    - Appropriate clothing to include a reflective vest.
- Additional factors to consider prior to flight departure:
    - Flights over people with the emphasis on the right to privacy.
    - Flights over sensitive areas.
    - Any flight that may adversely impact wildlife ecologically important areas, or sensitive habitats (preserved lands and waters, areas with threatened or endangered species).

- Launches, landings and routes should areas that would result in disruption to migratory patterns, breeding, nesting, feeding or sheltering of wildlife, when feasible.
- County personnel shall regularly review the Federal Aviation Administration's Strike Database (https://wildlife.faa.gov/) for guidance on areas to avoid.
- Potential aviary activity may be found at: https://ebird.org/home

SAFETY TRAINING

NEW CREW MEMBER

Safety training for all new UAS crew members will take place prior to any hands-on operation with aircraft or any mission flights. This training will ensure the crew member has the latest information about the program and safety guidance, and understands the process to report potential conflicts. All training will be documented in the crew members' training folders.

ANNUAL

All Fairfax County UAS crew members will participate in an annual safety training program. This training program will cover topics that include updates to federal, state or local legislation, regulations, or policies, best practices from previous missions flown, review of updates to the UAS program manual, and a review of safety information regarding aircraft and position assignments.

SAFETY TRAINING MATERIALS / DOCUMENTATION

The UAS Program Manager and Steering Committee, in coordination with the Agency Program Coordinators, will be responsible for developing, maintaining, and updating UAS related safety and risk assessment and mitigation training materials and documentation.

SUMMARY

It is the duty of every member within the UAS flight crew to contribute to the goal of safety-first operations and zero accidents. The process of assessment is not just for preflight, but a continual effort that needs to be second nature for every member of the flight crew during every aspect of each mission.

SECTION 8: OPERATIONAL TRAINING

OBJECTIVE

The key to safe and effective operations is maintaining a professional level of knowledge and competency through training.

The Fairfax County UAS program is comprised of three formal training programs. The first training program is the 16-hour ground school that will be used to help prepare all new program crew to take the FAA Part 107 exam. Training will include topics in meteorology, flight standards, aeronautical chart interpretation, communications and flight safety. If a candidate has an FAA Part 61 pilot's certificate, and has a current flight review, they will not be required to take the ground school.

The second training program to be completed by each candidate is flight school. During this training, each pilot and observer will be exposed to the basics of flight characteristics for the aircraft, maintenance procedures, safety and hands on flying the aircraft. Each pilot prior to flying an actual mission must have a minimum of 10 documented hours of flight time. Once the 10 hours has been met, the Chief Pilot will test and certify that the Pilot-In-Training has met all the training requirements and is a certified Fairfax County UAS pilot.

The third training program is recurring flight training. To maintain both the skills and qualification as a pilot each crew member must fly a minimum of three qualifying events in the preceding 90 days. A qualifying event can be either a live mission or training session. Each crew member must also maintain a current Remote Pilot Certificate issued by the FAA with small UAS rating in order to retain pilot qualifications in the UAS program.

The Fairfax County Park Authority has provided the UAS program a site where flight training may be conducted.

All flight hours and training will be maintained in the individual pilot's logbook.

INITIAL TRAINING

- Any new member shall successfully complete the required initial training before deployment as a member of a UAS flight crew.
- In addition to the formal training, pilots and observers must have completed sufficient safety training, to include communicating any instructions or information required to remain clear of conflicting traffic.
- In conjunction with fulfilling all training requirements for pilot/observer duties, the new member must also become familiar with UAS program operations, aircraft, and equipment.
- Before a member can operate as a pilot they must complete a period of flight training

with the UAS instructors to demonstrate proficiency of the flight training exercises and the airframe. This must be accomplished to show their ability and knowledge of the UAS.

- In conjunction with fulfilling all training requirements for pilot/observer duties, the new member must also become familiar with applicable rules, regulations and policies governing the protection of individuals' privacy, civil rights, and civil liberties in the Commonwealth of Virginia.
- In conjunction with fulfilling all training requirements for pilot/observer duties, the new member must also become familiar with applicable rules, regulations and policies governing the applicable FOIA requirements and data dissemination, storage, retention, and security requirements in the Commonwealth of Virginia**.**

RECURRING TRAINING

Recurring flight training will maintain a member's knowledge and skills as follows:

- Review and update on best practices and legal updates as it relates to the protection of individuals' privacy, civil rights, and civil liberties.
- Review and update on best practices or law as it relates to FOIA requests and data dissemination, storage, retention, and security requirements**.**
- All designated members within a participating agency shall maintain proficiency in their pilot/observer abilities.
- Pilots and observers will be required to fly a minimum of three actual or training missions every 90 days to maintain proficiency.
- Recurrent training is not limited to actual operating/observer skills, but includes knowledge of all pertinent UAS/aviation matters.
- Failure to prove proficiency, including failure to maintain a current Remote Pilot Certificate issued by the FAA with small UAS rating, can result in removal from UAS responsibilities.

TRAINING MATERIALS / DOCUMENTATION

The UAS Program Manager and Steering Committee, in coordination with the Agency Program Coordinators, will be responsible for developing, maintaining, and updating UAS related training materials and documentation.

SECTION 9: GENERAL OPERATING PROCEDURES

REQUEST FOR SUPPORT

All requests for UAS support shall be made directly to a respective agency program coordinator or through the Department of Public Safety Communication Center (DPSC) (County 911 Center DPSC will maintain the current list of certified UAS operators and supervisors to contact.

MISSION PRIORITIES

If more than one request is received for UAS support, the UAS Agency Program Coordinator in collaboration with the requestors will evaluate and determine the priority mission. If there is a determined need for a second crew the UAS Agency Program Coordinator will review the lineup and on-call notification list or request support from another participating agency. In general terms, requests for UAS support will be prioritized as follows:

- Life or Public Safety.
- Investigation / Documentation.
- Damage Assessment / Situational Awareness.

MISSION APPROVAL CRITERIA

The on call UAS Agency Program Coordinator will make the determination as to the approval of the mission request. Important approval decision factors include, but are not limited to:

- Is the mission request justified and necessary?
- Is the mission request within the capabilities of the equipment, program and personnel?
- Does the mission fall within federal, state, and local laws, regulations, and policies?
- Can the UAS be deployed safely based on current and forecast weather conditions?
- Are there sufficiently trained and qualified personnel available to safely operate the UAS?
- If the UAS deployment requires a search warrant, has one been requested and approved?
- Is there enough information available to make the decision or will a follow up call need to be made to the requestor?
- Determine proximity of critical infrastructure or restricted airspace.

If a mission is approved, a UAS Pilot-In-Command (PIC) will be selected and notified. Once deployed, the assigned PIC retains final approving authority, and may alter or cancel the mission. If a mission is altered or canceled notification will be made to the requestor and PIC's Agency Program Coordinator.

CALL-OUT PROCEDURES

Agencies will develop or follow existing call-out procedures and protocols. Agency Program Coordinators will be responsible for ensuring any respective agency call-out rosters are maintained, updated, and shared, if needed, with the Department of Public Safety Communications.

MISSION MINIMUM PERSONNEL REQUIREMENTS

All UAS missions, operational or training, require a minimum of a Pilot-In-Command (PIC) and Visual Observer (VO). Under no circumstances will a mission be approved or flown with only a PIC. A Safety Officer is a preferred addition if available, but not required.

In the event a pilot is still in training and has not been approved to fly missions as a solo operator the Chief Pilot or another certified PIC must be present to observe, monitor, and evaluate the trainee. For more complex missions that require a second or third crew and UAS there must also be a UAS Agency Program Coordinator on-scene to coordinate with the incident commander.

FLIGHT BOUNDARIES

The airspace overlying Fairfax County has complex layers of varying access restrictions. With more than 60 percent of Fairfax County falling into the Flight Restricted Zone (FRZ) it is imperative that the PIC evaluates the location they will be taking off from the area they will be traversing to get to the scene, and the area of operation to ensure they can operate without an airspace authorization. The following basic guidelines will be followed:

- Flight crews are authorized to fly in Class G airspace anywhere in Fairfax County to include the Towns of Vienna, Herndon, and Clifton and parts of the City of Fairfax. PIC's of missions located in Surface Class B, C or D airspace must have a Wide Area Authorization or be approved via the Low Altitude Authorization and Notification Capability (LAANC) system. Missions will only be flown in other localities based on appropriate request and approval protocols.
- If a surrounding jurisdiction requests assistance of the UAS team, that request must first go to the UAS Agency Program Coordinator for review. In many cases the requesting agency may be referred to the Virginia Department of Emergency Management (VDEM) first as they have a team that is available 24/7.
- If VDEM is not available, an assessment will be made to determine availability of a County flight crew. Approval by the crew's Agency Program Coordinator will need to be done first and if approved, the UAS team will need to submit an emergency FAA COA to get access to the other jurisdiction.
- County UAS program flight operations will follow FAA regulations.
- The maximum altitude for UAS flight operations shall not exceed 400' per FAA regulations.

PERSONAL EQUIPMENT

Each member of the flight crew will be responsible for wearing appropriate clothing and having the correct equipment with them while on duty. The following are some of the guidelines that should be followed:

- The UAS flight crew should always wear eye protection always while the UAS is in flight.
- Although there is no specific uniform the UAS unit is required to use for proper operation of the UAS, the flight crew should take necessary measures to deploy in a professional manner and take into consideration that all deployments are subject to viewing by the public or media at deployment locations.
- While on the scene of any incident, the UAS flight crew will wear their County issued identification.
- Equipment such as a County-issued portable radio or cellular phone should be brought to a mission.
- Snacks and other limited food items should become a part of flight crew flight bag. Missions may only last an hour, but others may last multiple hours. Any dietary or special allergies needs should be included in the flight bag.
- FAA rules do not allow visual aids other than corrective glasses for keeping the UAS within line of sight, although not permitted for flight operations, a set of binoculars may be carried and used to scan the sky and surrounding area for obstructions or other hazards. They are not permitted to be used by flight crews during flight operations.

EMERGENCY PROCEDURES

Personnel flying the UAS will be trained that in any emergency, the safety of persons on the ground and in the air is the number one priority. The following are the emergency procedures and each will be documented with an emergency checklist for flight crew to review.

- Fire - UAS will be flown away from people and property until a safe landing location can be found. A fire extinguisher and first-aid kit will be located at the mission site.
- Loss of Link - Onboard system will be established to execute lost link protocol by either landing immediately or returning to launch point to land, depending on conditions, operational and safety requirements. In the event the lost link happens near an airport or helicopter landing area, a call to the appropriate airport tower will be immediately made. The phone numbers are located on the aeronautical chart.
- Loss of Visual Line of Sight - If flight crew members lose, other than momentarily, sight of the aircraft, the pilot will initiate a 'Go-Home' on the remote control. The 'Go-Home' protocol is identical to the Loss of Link protocol. Once visual contact with the aircraft is re-established the pilot will take back the aircraft using the remote control.
- Loss of Propulsion - During propulsion failure, coordinated flight cannot be maintained effectively in the most common configurations. An announcement will be made to all personnel on-scene advising them of the emergency. If the aircraft fails to successfully land at a predetermined location a recovery operation will be initiated.

- Personal Injury - In the unlikely event of an emergency involving the aircraft and person(s) on the ground, the flight crew shall maintain a list of applicable numbers (EMS, Dispatch) for emergency contact.
- Lost Communications - the PIC and VO will be ideally physically collocated during operations and communications will be through direct verbal communication. However, if the PIC and VO are not collocated and direct verbal communication is not possible, the following communication tools can be utilized:
    - Handheld radio.
    - Voice activated headsets and microphones.
    - Cellular phone.
    - Hand Signals (used solely or in conjunction with the communication equipment).
    - If communication is lost and cannot be re-established, the UAS will immediately land.

PRE-FLIGHT/ POST-FLIGHT ACTIONS

- Inspections
    - All flight crew members are responsible for a thorough preflight inspection of the UAS.
    - Before and after each deployment (whether a mission or training), the flight crew shall conduct a thorough inspection of the UAS in accordance with the instructions contained in the manufacturer's user manual.
    - Any issues found that will put in jeopardy the safe operation of the UAS shall be documented and resolved immediately prior to flight.
    - Any physical damage to equipment that cannot be resolved on-site, and which have an impact on safety of the mission, will override the deployment. These issues must be resolved before flight.
- Weather
    - Before each deployment, the flight crew will ensure the gathering of weather related information forecast for the area and duration of deployment. The flight crew shall utilize FAA approved weather resources to obtain the latest and most current weather conditions. The weather evaluation will include current weather and projected weather moving into the area within the next 6 hours.
    - If available, an anemometer should be utilized to better estimate the wind speed and determine if it is within the capabilities of the airframe being flown.
    - The weather conditions reported for the operation shall be recorded in the pre-flight checklist.
- Documentation
    - Inspection and weather checks will be documented prior to flight within the flight log book.
    - After each flight, the pilot will complete a statement documenting the UAS operations and log appropriate flight/equipment usage times.
- Planning

    - The flight crew shall familiarize themselves with all available information concerning the deployment including, but not limited to, the weather conditions, hazards, description of the incident, deployment goals, etc.
    - The flight crew will ensure that the location for take-off and emergency landing is adequate for a safe deployment.
    - The take-off/landing area should be clearly marked and identifiable with easily seen markers.
    - At least one emergency landing area should be identified per deployment.
    - The flight crew will ensure that they are aware of their surroundings in the event an emergency landing is necessary. This includes the ability to recover the UAS.
- Checklists
    - The flight crew shall utilize pre-flight checklists to ensure the highest level of safety for deployment.
    - Prior to flight, the flight log shall be initiated.
- Maintenance
    - Although there are few parts on the UAS that need servicing, it is necessary that the manufacturer's maintenance schedule is followed and properly documented.
    - Any issues that arise during maintenance that cannot be resolved by routine methods shall be forwarded to the manufacturer/approved dealer for further technical support.
- Other
    - The flight crew will ensure that no items are attached to the UAS prior to flight that are not required for safe operation or to complete the mission goal.
- Pre-Flight Briefing
    - Review of mission goals and methods to achieve goals, including handoff procedures. This will be done with the incident commander and all UAS crew members prior to launch.
    - Review of current and forecasted weather conditions and weather limitations
    - Review of current Notice to Airmen (NOTAM) and Temporary Flight Restrictions (TFR) that have been issued for the proposed flight area.
    - Identification of mission limitations and safety issues such as battery charge, Global Positioning Satellite (GPS) strength, and potential for radio interference.
    - Review of proposed flight area, including maximum celling and floor and applicable airspace restrictions.
    - Review of communication procedures between flight crew members, including the availability of cell phones and portable air band radio to communicate with air traffic control in the event of a fly-away or lost link.
    - Review of emergency/contingency procedures including aircraft system failure, flight termination, divert, and lost link procedures.
    - Review of required video or digital images requirements.
    - Contents of the COA, if applicable
    - Frequencies to be used.
- Post Flight Briefing

- After all flights, the Pilot-In-Command will perform a post flight review with their team and incident commander / designee.
- Opportunities for improvement will be documented.
- Protocols for the memory card will be followed.
- An inspection of all equipment will be done and any damage or other deficiency found will be noted in the maintenance logbook.
- Pilot flight hours will be added to the logbook.

GLOSSARY OF TERMS

Above Ground Level (AGL): AGL is the altitude expressed in the actual number of feet measured above the ground.

Air Traffic Control (LATC): A service operated by appropriate authority to promote the safe, orderly and expeditious flow of traffic.

Area Command (Unified Area Command): An organization established (1) to oversee the management of multiple incidents that are each being handled by an ICS organization or (2) to oversee the management of large or multiple incidents to which several Incident Management Teams have been assigned. Area Command has the responsibility to set overall strategy and priorities, allocate critical resources per priorities, ensure that incidents are properly managed, and ensure that objectives are met and strategies followed. Area Command becomes Unified Area Command when incidents are multi-jurisdictional. Area Command may be established at an EOC facility or at some location other than an ICP.

Available Resources: Resources assigned to an incident, checked in, and available for use.

Certificate of Authorization (COA): Authorization issued by the FAA to a public operator and grants permission to operate a UAS for governmental functions within specific boundaries and parameters.

Call out Procedure: The process used to activate the Fairfax County UAS program for deployment of resources.

Civil Morning Twilight: Begins when the sun is 6 degrees below the horizon and ends at sunrise.

Civil Evening Twilight: Begins at sunset and ends when the sun reaches 6 degrees below the horizon

Command Staff: In an incident management organization, the Command Staff consists of the Incident Commander and the special staff positions of Public Information Officer, Safety Officer, Liaison Officer, and other positions as required, who report directly to the Incident Commander. They may have an assistant or assistants, as needed.

Declaration of Emergency: Whenever, in the opinion of the governing official, the safety and welfare of the people of the jurisdiction require the exercise of extreme emergency measures due to a threatened or actual disaster, they may declare a state of emergency to exist.

Disaster Recovery Center (DRC): A facility established in a centralized location within or near the disaster area at which disaster victims (individuals, families, or businesses) apply for disaster aid. Commonwealth and federal officials may establish one or more DRC within federally declared jurisdiction where 0ne-on-one assistance can be provided to disaster survivors.

Emergency/Disaster: An event that demands a crisis response beyond the scope of any single line agency or service and that presents a threat to a community or larger area. An emergency is usually an event that can be controlled within the scope of local capabilities; a major emergency or disaster usually requires resources beyond what is available locally.

Emergency Operations Center (EOC): The physical location at which the coordination of information and resources to support domestic incident management activities normally takes place. An EOC may be a temporary facility or may be in a more central or permanently established facility, perhaps at a higher level of organization within a jurisdiction. EOCs may be organized by major functional disciplines (e.g., fire, law enforcement, and medical services), by jurisdiction (e.g., Federal, State, regional, County, city, tribal), or by some combination thereof.

Emergency Operations Plan (EOP): A document which provides for a preplanned and coordinated response in the event of an emergency or disaster situation.

Emergency Support Function (ESF): A function which tasks agencies to provide or to coordinate certain resources in response to emergencies or disasters.

Flight Observer (FO): The individual trained to maintain the line-of-sight and 360-degree hazard awareness with the aircraft in direction support of the pilot in command. They are responsible for the safe operations of the immediate area.

Geographic Information System (GIS): A computer system capable of assembling, storing, manipulating, and displaying geographically referenced information, i.e. data identified per their locations.

Incident: An occurrence or event, natural or human caused, that requires an emergency response to protect life or property. Incidents can, for example, include major disasters, emergencies, terrorist attacks, terrorist threats, wild land and urban fires, floods, hazardous materials spills, nuclear accidents, aircraft accidents, earthquakes, hurricanes, tornadoes, tropical storms, war-related disasters, public health and medical emergencies, and other occurrences requiring an emergency response.

Incident Action Plan (IAP): An oral or written plan containing general objectives reflecting the overall strategy for managing an incident. It may include the identification of operational resources and assignments. It may also include attachments that provide direction and important information for management of the incident during one or more operational periods.

Incident Command Post (ICP): The field location at which the primary tactical-level, on-scene incident command functions are performed. The ICP may be collocated with the incident base or other incident facilities and is normally identified by a green rotating or flashing light.

Incident Command System (ICS): A model for disaster response that uses common terminology, modular organization, integrated communications, unified command structure, action planning, manageable span-of-control, predesignated facilities, and comprehensive resource management. In ICS there are five functional elements: Command, Operations, Logistics, Planning and Finance/Administration. **Incident Commander (IC):** The individual responsible for the management of all incident operations.

Initial Damage Assessment Report: A report that provides information regarding overall damage to public and private property, thereby providing a basis for an emergency declaration and/or disaster assistance.

Instrument Flight Rules (IFR): Under IFR, ATC exercises positive control of all aircraft within designated airspace. Any pilot operating in this environment must meet minimum equipment requirements and have special certification in order to fly.

Joint Field Office (JFO): An administrative office established by FEMA and staffed by appropriate federal/state personnel following a disaster declaration by the president. The Disaster Field Office is the primary field location for the coordination of response and recovery operations.

Joint Information Center (JIC): Is a facility established to coordinate all incident-related public information activities. It is the central point of contact for all news media at the scene of the incident. Public information officials from all participating agencies should collocate at the JIC.

Joint Information System (JIS): The JIS refers to processes, procedures, and systems for communicating timely and accurate information to the public during crisis or emergency situations.

Jurisdiction: A range or sphere of authority. Public agencies have jurisdiction at an incident related to their legal responsibilities and authorities. Jurisdictional authority at an incident can be political or geographical (e.g., city, County, tribal, state, or federal boundary lines) or functional (e.g., law enforcement, public health).

Landing Zone (LZ): A place designated and intended to be used for the takeoff and landing of the UAS aircraft.

Liaison Officer (LOFR): A member of the Command Staff responsible for coordinating with representatives from cooperating and assisting agencies.

Local Emergency: The condition declared by the local governing body when, in its judgment, the threat or actual occurrence of a disaster is or threatens to be of sufficient severity and magnitude to warrant coordinated local government action to prevent or alleviate loss of life, property damage, or hardship. A local emergency arising wholly or substantially out of a resource shortage may be declared only by the Governor, upon petition of a local governing body, when he deems the situation to be of sufficient magnitude to warrant coordinated local government action to prevent or alleviate the hardship or suffering threatened or caused thereby.

Major Disaster Declaration: Any natural or man-made disaster in any part of the United States which, in the determination of the President of the United States, is or thereafter determined to be of sufficient severity and magnitude to warrant disaster assistance above and beyond emergency services by the federal government to supplement the efforts and available resources of local and state governments, and relief organizations in alleviating the damage, loss, hardship, or suffering caused.

Mitigation: Mitigation is any activity taken to eliminate or reduce the degree of long-term risk to human life and property from natural, technological, and human-caused hazards.

Mutual Aid Agreement (MAA): A written agreement between agencies and/or jurisdictions in which they agree to assist one another, upon request, by furnishing personnel and equipment in an emergency.

National Airspace System (NAS): The common network of U.S. airspace; air navigation facilities, equipment and services, airports or landing areas; aeronautical charts, information and services; rules, regulations and procedures, technical information, and manpower and sharing material. Included are system components shared jointly with the military.

National Incident Management System (NIMS): A system mandated by HSPD-5 that provides a consistent, nationwide approach for Federal, State, local, and tribal governments; the private sector; and NGOs to work effectively and efficiently together to prepare for, respond to, and recover from domestic incidents, regardless of cause, size, or complexity. To provide for interoperability and compatibility among Federal, State, local, and tribal capabilities, the NIMS includes a core set of concepts, principles, and terminology. HSPD-5 identifies these as the ICS; multiagency coordination systems; training; identification and management of resources (including systems for classifying types of resources); qualification and certification; and the collection, tracking, and reporting of incident information and incident resources.

National Response System: Pursuant to the NRF, the mechanism for coordinating response actions by all levels of government (40 CFR § 300.21) for oil and hazardous substances spills and releases.

National Weather Service (NWS): The federal agency which provides localized weather information to the population, and during a weather-related emergency, to state and local emergency management officials.

Nongovernmental Organization (NGO): A nonprofit entity that is based on interests of its members, individuals, or institutions and that is not created by a government, but may work cooperatively with government. Such organizations serve a public purpose, not a private benefit. Examples of NGOs include faith-based charity organizations and the American Red Cross.

Notice to Airmen (NOTAM): A NOTAM is time critical information concerning the establishment, condition, or change in any component of the NAS. The NOTAM provides knowledge that is essential to personnel concerned with flight operations in a designated area.

Pilot-in-Command (PIC): The individual responsible for the overall flight operations of a specific mission.

Presidential Declaration: A presidential declaration frees up various sources of assistance from the Federal government based on the nature of the request from the governor.

Public Assistance: Aid available to state or local governments to pay part of the costs of rebuilding a community's damaged infrastructure. Public Assistance may include debris removal, emergency protective measures and public services, repair of damaged public property, loans needed by communities for essential government functions and grants for public schools.

Recovery: Recovery in the short-term is any activity to return vital life-support systems and critical infrastructure to minimum operating standards; and in the long-term any activity designed to return life to normal or an improved state.

Response: Response is any action taken immediately before, during, or after an emergency situation to reduce casualties, save lives, minimize damage to property, and enhance the effectiveness and speed of recovery.

Search and Rescue: The employment of available personnel, equipment and facilities in rendering aid to persons and property in distress, or potential distress, in the air, water or on the land.

Service Information Center (SIC): A SIC is an information and resource facility established by the County to effectively communicate response and recovery information to the public, provide recovery services to the public, streamline the recovery process, and alleviate the burdens of recovery for impacted populations.

Standard Operating Procedures (SOP): Guidelines for operating procedures in an emergency; includes equipment, processes and methods.

State of Emergency: The condition declared by the Governor when, in his judgment, a threatened or actual disaster in any part of the State is of sufficient severity and magnitude to warrant disaster assistance by the State to supplement local efforts to prevent or alleviate loss of life and property damage.

Unaffiliated Volunteer: An individual who is not formally associated with a recognized voluntary disaster relief organization or assigned to an agency; also, known as a spontaneous or emergent volunteer.

Unmanned Aircraft System (UAS): An aircraft that is operated without a physical human presence within or on the aircraft which, in the way it is used or the manner in which it is equipped, is capable of performing audio or visual surveillance and guided by remote control.

Unified Command: An application of ICS used when there is more than one agency with incident jurisdiction or when incidents cross political jurisdictions. Agencies work together through the designated members of the Unified Command to establish their designated Incident Commanders at a single Incident Command Post and to establish a common set of objectives and strategies and a single Incident Action Plan.

Virginia Department of Emergency Management (VDEM): Commonwealth of Virginia Department of Eminency Management.

Visual Observer (VO): The VO is equally responsible for the visual observation of the UAS while in-flight. They are responsible for notifying the Pilot-In-Command of any obstructions, terrain, structures, air traffic, weather or any circumstance that may impact the aircraft. They manage communications and integration with the person in charge.

Volunteer: Any individual accepted or assigned to perform services by an agency that has authority to accept volunteer services when the individual performs services without promise, expectation, or receipt of compensation for services performed.

ACRONYMS

AED – Automatic External Defibrillator

ATC – Air Traffic Control

COA – Certificate of Authority

CERT - Community Emergency Response Team

COOP – Continuity of Operations Plan

COG - Continuity of Government

DHS - Department of Homeland Security

DOC - Department Operation Centers

DoD - Department of Defense

DMORT - Disaster Mortuary Operation Response Teams

DPSC - Department of Public Safety Communications

DRC - Disaster Recovery Centers

EAN - Employee Alert Network

EAS - Emergency Alert System

EOD – Explosives Operation Division

EMAC - Emergency Management Assistance Compact

EMnet - Emergency Management Notification Network

EOC - Emergency Operations Center

ESF - Emergency Support Function

FAA – Federal Aviation Administration

FAC - Family Assistance Center

FCRC - Fairfax County Recovery Center

FEMA - Federal Emergency Management Agency

FLIR – Forward Looking Infrared

FRZ – Flight Restriction Zone

GIS - Geographic Information Systems

IAP - Incident Action Plan

IC - Incident Command

ICP – Incident Command Post

ICS - Incident Command System

IMSAFE – Illness, Medication, Stress, Alcohol, Fatigue, Emotion

IMT - Incident Management Team

IT - Information Technology

JFO - Joint Field Office

JIC - Joint Information Center

LEPC - Local Emergency Planning Committee

LOFR - Liaison Officer

MACC - Multi-Agency Coordination Center

MCS - Multi-Agency Coordination System

MDW - Military District of Washington

MWCOG - Metropolitan Washington Council of Governments

NCR - National Capital Region

NDMS - National Disaster Medical System

NGO - Non-Governmental Organizations

NIMS - National Incident Management System

NOAA - National Oceanic and Atmospheric Administration

NOTAM – Notice to Airman

NVHA – Northern Virginia Hospital Alliance

NRF - National Response Framework

NVRC - Northern Virginia Regional Commission

OSC - On-Scene-Coordinator

PDA - Preliminary Damage Assessment

PIC – Pilot in Command

PIO - Public Information Officer

PSA - Public Service Announcements

RECP - Regional Emergency Coordination Plan

RHCC - Regional Healthcare Coordination Center

RPIC – Remote Pilot in Command

NVRIC – Northern Virginia Regional Intelligence Center

RICCS - Regional Incident Communication and Coordination System

SARA - Superfund Amendments and Reauthorization Act

SHMO - State Hazard Mitigation Officer

SIC - Service and Information Centers

SNS - Strategic National Stockpile

SOFR - Safety Officer

SUAS – Small Unmanned Aircraft System

TFR – Temporary Flight Restrictions

UAS – Unmanned Aircraft Systems

USAR – Urban Search and Rescue Team

VADEQ- Virginia Department of Environmental Quality

VCMC - Volunteer Coordination and Mobilization Center

VDEM - Virginia Department of Emergency Management

VDOT - Virginia Department of Transportation

VFOIA – Virginia Freedom of Information Act

VIPS - Volunteers in Police Service

VO – Visual Observer

APPENDIX A – Sample Retention Schedules

Note: This Appendix sets forth several retention schedules that may apply to data imagery captured as part of the County's UAS Program. Retention schedules are based on the content of the record and not its format. This Appendix is excerpted from the retention schedules for localities issued by the Library of Virginia. The Library of Virginia frequently amends these schedules and the current versions may be found at http://www.lva.virginia.gov/agencies/records/retention.asp.

Type of Record:	**General Schedule and Series**	**Retention period**
Motion pictures or videos produced by or for the County	GS-19 Series 010068	Permanent
Historically significant photographs or videos	GS-19 Series 010073	Permanent
Non-historically significant photographs or videos	GS-19 Series 010075	Destroyed when no longer administratively useful
Disaster recovery files	GS-16 Series 200036	Five years after claims filed or written off
Code Enforcement	GS-06 Series 000299	3 years after event
Fire Code Compliance Inspection Reports	GS-17 Series 007043	10 years after submission
Law enforcement surveillance or monitoring recordings not used as evidence	GS-17 Series 100796	30 days after event
Law enforcement missing Persons files	GS-17 Series 100780	75 years
Law enforcement missing Persons files – Resolved	GS-17 Series 100779	One year after case closed
Law enforcement missing Persons with history files – Resolved	GS-17 Series 100755	Five years after case closed
Law enforcement Traffic accident reports	GS-17 Series 100781	Three years after event
Law enforcement Investigative Case Files, Less Serious Offenses – Resolved	GS-17 Series 200146	30 years after case closed
Law enforcement Investigative Case Files: Less Serious Offenses – Unresolved	GS-17 Series 200147	50 years after creation
Law enforcement Investigative Case Files: Non-Serious Offenses – Resolved	GS-17 Series 000266	10 years after case closed

Law enforcement Investigative Case Files: Non-Serious Offenses - Unresolved	GS-17 Series 200148	5 years after creation
Law enforcement Investigative Case Files: Serious Offenses - Resolved	GS-17 Series 100771	75 years after case closed
Law enforcement Investigative Case Files: Serious Offenses – Unresolved	GS-17 Series 200145	100 years after creation