



Crime Scene Unit
Unmanned Aircraft System (UAS) for Multi-ray
Photogrammetry Standard Operating Procedure
Crime Scene Division



Introduction

The mission of the Small Unmanned Aircraft Systems (UAS) program is to provide aerial support and assistance to CSU personnel pursuant to their Division's mission and requirements. Specifically, UAS are platforms for collecting data for documenting and mapping crime scenes. Handheld iPad data collection is also used to collect images for multi-ray photogrammetry-based mapping of crime scenes that may be inaccessible to UAS platforms. Unmanned aircraft shall be operated in a responsible manner consistent with CSU policy, Texas State laws, and federal rules and regulations; ensuring that the privacy rights of the people in the State of Texas are respected. This document will define the missions, training requirements, standardization, specific flight team responsibilities and duties, and the reporting requirements to which CSU employees will adhere in order to operate and safely deploy unmanned aircraft and map and document crime scenes using multi-ray photogrammetry techniques.



TABLE OF CONTENTS

1. Purpose and Scope:	4
2. Definitions:	4
3. Organizational Definitions-Chain of Command Relationships and Flight Team Members:.....	6
4. Missions:.....	7
5. Emergency Procedures:.....	8
6. Training and Standardization:.....	10
7. Position Responsibility and Duties:	12
8. Reporting Requirements:	14



1. Purpose and Scope:

- 1.1. This policy establishes the authorized use and operational guidelines for Unmanned Aircraft Systems (UAS) within the Houston Forensic Science Center. The UAS program is a function of the Crime Scene Unit who are responsible for purchasing, maintaining, manning, operating and storing UAS. All procedures shall be in compliance with the HFSC Quality Manual.
- 1.2. This policy is designed to minimize risk to people, property, and aircraft during the operation of the UAS while continuing to safeguard the right to privacy of all persons. It is further designed to keep CSU and its personnel from being subject to the civil and criminal penalties for misuse of UAS and remain in compliance with the strict legislative reporting requirements.
- 1.3. This policy is created to ensure that CSU employees who operate and deploy UAS are Remote Pilots in Command (RPIC) as defined in the Federal Aviation Administration (FAA) and have received training on the proper use and safe operation of UAS.
- 1.4. This policy will define the training and certifications necessary to operate and deploy unmanned aircraft and will establish guidelines and best practices for RPICs to follow in order to safely deploy UAS assets.
- 1.5. At all times CSU and its personnel shall comply with 14 CFR Parts 107 and/or Certificate of Authorization, plus applicable portions of CFR 14 Parts 61 and 91; as well as Texas Government Code 423 and 2205.
- 1.6. If conflicts exist between FAA regulations, Texas Government Code, Texas Administrative Code and any part of this policy, the most restrictive will apply.

2. Definitions:

- 2.1. **Aircraft.** A device that is used or intended to be used for flight in the air. This includes UAS.
- 2.2. **Airworthiness Statement.** The airworthiness of the UAS is self-certified by the Remote Pilot in Command through a preflight inspection prior to flight.
- 2.3. **Certificate of Authorization (COA).** COA is an authorization issued by the Federal Aviation Administration (FAA) to a public operator for a UAS. After a complete application is submitted, the FAA conducts an operational and technical review. If necessary, provisions or limitations may be imposed as part of the approval to ensure the UAS can operate safely with other airspace users.
- 2.4. **Crewmember.** A person assigned to perform duty while an aircraft is operating.
- 2.5. **Crew Resource Management (CRM).** The effective use of all available resources including human, hardware, and information resources and coordination in the use of those resources by the RPIC, Remote Pilot and Visual Observer.
- 2.6. **First Person View (FPV).** The Remote Pilot is observing the flight solely through the UAS camera.
- 2.7. **Flight time.** Remote piloting flight time commences when an aircraft moves under its own power for the purpose of flight and ends when the aircraft comes to rest after landing.
- 2.8. **Image.** Means any capturing of soundwaves, thermal, infrared, ultraviolet, visible light, or other electromagnetic waves, or other conditions existing on or about real property in this state or an



individual located on that property. Imagery may include data about people, organizations, events, incidents, or objects as well as metadata.

- 2.9. Visual Line of Sight (VLOS).** The Remote Pilot and/or the Visual Observer can see, unaided, the UAS under their control during flight.
- 2.10. National Airspace System (NAS).** Airspace inside the continental United States. It is further defined through air navigation facilities, equipment and services, airports or landing areas, aeronautical rules, regulations and procedures. There are two types of airspace within the NAS, controlled and uncontrolled. Operation of a UAS in controlled airspace adds another layer of responsibilities and requirements that must be met to operate the UAS.
- 2.11. Night Flight.** Flight of a UAS that occurs between the hours of one-half hour after sunset and one-half hour before sunrise. The time of sunset and sunrise are determined by the National Oceanic and Atmospheric Administration (NOAA), but 14 CFR Part 107 will allow small UAS operations to be conducted during civil twilight if the small unmanned aircraft has lighted anti-collision lighting visible for at least 3 statute miles.
- 2.12. Mission Area of Operations (AOR).** A defined perimeter/parameter to be determined based on the scope and type of the operation and a defined operational ceiling at or below 400 feet above the ground. The altitude of the small, unmanned aircraft cannot be higher than 400 feet above the ground, unless the small, unmanned aircraft is flown within a 400 foot radius of a structure and does not fly higher than 400 feet above the structure's immediate uppermost limit.
- 2.13. Unmanned Aircraft System (UAS).** UAS is the unmanned aircraft system and all of the associated support equipment, control station, data links, telemetry, communications, and navigation equipment, etc., necessary to operate the unmanned aircraft. The aircraft's flight is controlled either autonomously by hardware within the UAS or under the remote control of a Remote Pilot on the ground or in another ground vehicle. For purposes of this program, the 14 CFR Part 107 compliant UAS shall weigh less than 55 pounds fully loaded. Maximum groundspeed is limited to 100 mph (87 knots).
- 2.14. Visual Flight Rules (VFR).** All flights with the UAS shall be conducted under VFR conditions and at an altitude below 400 feet AGL. VFR is established as a 3-mile visibility and a cloud ceiling of 1,000 feet for day operations and 5-mile visibility with a cloud ceiling of 2,000 feet for night operations.
- 2.15. Aircraft Registration.** All UAS operated by CSU personnel must be registered in accordance with current FAA 14 CFR Part 107 regulations. Registration requirements apply to UAS owned and operated by CSU as well as UAS on loan or UAS owned by outside agencies when operated by a CSU RPIC.



3. Organizational Definitions-Chain of Command Relationships and Flight Team Members:

3.1. CEO/designate will:

- 3.1.1. Establish protocols to prevent violations of policy, law, and public privacy;
- 3.1.2. Be responsible for CSU UAS reporting requirements under Texas Government Code 423 and 2205; and
- 3.1.3. Review and approve a training curriculum to assess the knowledge, skills and abilities of RPICs and Visual Observers.

3.2. CSU management will:

- 3.2.1. Resolve conflicts or disputes that might arise related to policy or mission within their division;
- 3.2.2. Control the dissemination of any information produced by the divisions UAS team;
- 3.2.3. Designate the Division Program Coordinator
- 3.2.4. Be responsible for assisting in the tactical and administrative functions related to the UAS program within his/her Division;
- 3.2.5. Maintaining a current list of all certified crew members to include Remote Pilots and Visual Observers;
- 3.2.6. Maintaining the training records in coordination with the Quality Division for crew members and compliance with Texas Government Code 423 reporting requirements;
- 3.2.7. Be responsible for the condition, maintenance, and flight records of the UAS and its associated equipment within the data reporting software of Drone Sense; and
- 3.2.8. Be responsible for registration and markings of all UAS owned and operated by their division in accordance with current FAA 14 CFR Part 107 regulations.

3.3. Flight team. Any combination of the RPIC, Remote Pilot or Visual Observer(s). ONLY the RPIC meets the FAA definition of crewmember.

3.4. Remote Pilot. The individual exercising pilot at the controls over the UAS during flight. The Remote Pilot need not be 14 CFR 107 certified if the pilot is under the supervision of a RPIC who is in direct communication and in a position to take over control of the UAS, regardless of certification. Undesignated remote pilots may be student pilots at the controls.

3.5. Remote Pilot in Command (RPIC). The mission commander with on-site authority for the UAS. The individual solely responsible for the overall flight operations for a specific mission. He/She may also act as either Remote Pilot or Visual Observer. Regardless, He/She may not delegate his/her responsibility. An RPIC may only operate one UAS at a time. Each UAS in use shall have its own RPIC assigned.

3.6. Visual Observer. The individuals trained to maintain the line-of-sight and 360-degree hazard awareness around the UAS at all times and assist the RPIC in carrying out all duties required for the safe operation of the UAS. Under 14 CFR Part 107, Visual Observers are not crewmembers and have no responsibility or authority over the UAS operation. Visual Observers may be formally trained and certified for special operations (formal training is required for night operations), or they may be chosen ad hoc and properly briefed by the RPIC (day operations only). Name and contact information of the visual observer must be documented.



4. Missions:

- 4.1. All missions will be flown in accordance with FAA regulations, 14 CFR Parts 107 and/or Certificate of Authorization, applicable portions of 14 CFR Parts 61 and 91, current FAA National Policy regarding UAS Operational Approval, Texas Government Code 423 and the Aircraft Operations Division Manual relating to the operation of UAS.
- 4.2. **Approved Uses/Missions:** All UAS mission requests shall be authorized by a Division Director, or his/her designee(s). Crime scenes are the primary approved use. Crime scenes are those scenes where HFSC has been called to a scene by a law enforcement agency (primarily HPD). A crime scene may involve one or more areas that may be geographically distributed. Before flying any missions, the AOR will be discussed and agreed with investigators on the scene and this basic area documented on the flight documentation form. Other case by case missions may be approved by Division Directors or his/her designee if those missions are immediately necessary to preserve the health, safety, and welfare of people or property within the state of Texas.
- 4.3. **Weather Brief:** Weather shall be obtained by the RPIC for the local area of operation to include Meteorological Aerodrome Reports (METAR) and Terminal Area Forecasts (TAF) from the closest airport reporting weather conditions. 1-800-WX BRIEF will provide a live briefer with access to this data. Additional weather information may be obtained from the National Oceanic Atmospheric Administration (NOAA) (<http://www.aviationweather.gov/adds/>), or another site or cell phone application to review the following: weather radar, ceiling/visibility, wind/temperatures, turbulence, Significant Meteorological Information (SIGMET), NOTAMs, TFRs and icing.
- 4.4. **Pre-Flight Briefing:** RPIC, Remote Pilot and Visual Observer (if needed) and any other flight team members must participate in the pre-flight briefing, led by the RPIC prior to aircraft launch, which includes, but is not limited to:
 - 4.4.1. Review of the mission's goals and expected outcomes.
 - 4.4.2. Review of current and forecasted weather conditions.
 - 4.4.3. Review of current Notice to Airmen (NOTAMs) and Temporary Flight Restrictions (TFRs) that have been issued for the proposed flight area.
 - 4.4.4. Document authority and that briefings occurred on the flight documentation form.
 - 4.4.5. Identification of mission limitations and safety issues such as; battery charge, GPS strength, and potential for radio interference.
 - 4.4.6. Review of proposed Mission AOR -flight area, including maximum ceiling and floor.
 - 4.4.7. Review of communication procedures between RPIC, Visual Observer, and other personnel used to support the mission. Including verifying phone numbers used to communicate with Air Traffic Control in the event of a fly-away or other flight emergency.
 - 4.4.8. Review of emergency/contingency procedures including aircraft system failure, flight termination, divert, and lost link procedures.
 - 4.4.9. Execution of a pre-flight check utilizing the approved checklist.



4.4.10. The RPIC shall declare to crew members the type of authorization the flight is being conducted under, Part 107, Blanket COA, Jurisdictional COA, or SGI COA.

The RPIC will be responsible to ensure that the above steps have been accomplished prior to flight.

4.5. Mission Debrief: After changeover or landing, the RPIC shall debrief all missions.

4.6. Pilot at the controls: A person operating a small UAS must either hold a remote pilot airman certificate and be acting as RPIC or be under the direct supervision of the RPIC who is in a position to take immediate control of the aircraft.

4.7. Line of Sight: With vision that is unaided by any device other than corrective lenses, the Remote Pilot in Command, the Visual Observer (if one is used), or the person manipulating the flight controller of the UAS must be able to see the unmanned aircraft throughout the entire flight. Visual line of sight is required in order to know the unmanned aircraft's location and flight status (attitude, altitude, and direction of flight), observe the airspace for other air traffic or hazards, and to determine that the unmanned aircraft does not endanger the life or property of another. All flight team members essential to the operation of the unmanned aircraft shall be able to verbally communicate at all times. For operational necessity including safety, the RPIC or person manipulating the controls may intentionally maneuver the UAS so that he/she loses sight of the UAS for brief periods of time, however he/she must regain VLOS as soon as practicable.

4.8. Preflight and Postflight Documentation: UAS Preflight checks will be documented by the RPIC prior to all UAS operations on the flight documentation form. Within 5 days after each flight, the RPIC will complete a flight log documenting the UAS's operations in accordance with Texas Government Code 423 on the flight documentation form and maintained in the case file.

4.9. Maintenance: Maintenance must be up to date prior to launch. Accurate UAS maintenance reporting is the responsibility of CSU in accordance with the manufacturer recommendations. When maintenance is performed, a test flight shall be conducted and documented in accordance with the manufacturer's instructions. The RPIC will not fly any aircraft that he/she suspects does not meet airworthiness requirements following the preflight inspection. Timely maintenance and accurate reporting is required to enhance mission availability and safety.

4.10. Payloads: No payloads beyond those included as part of the manufactured product are allowed.

5. Emergency Procedures:

5.1. Emergency Procedures stated in the manufacturer's operations manual shall be complied for all UAS operations. In the event of an emergency involving the safety of persons or property, the RPIC may deviate from the procedures of this directive relating to aircraft, equipment, and weather minimums to the extent required to meet the emergency.

5.2. No member of CSU, regardless of involvement in an emergency situation, shall make any statements to the general public or to news-gathering agencies without the knowledge and approval of the Director through the CEO and PIO.



5.3. Lost Link: A loss of command-and-control link contact with the UAS such that the remote pilot can no longer manage the aircraft's flight and as a result of the control loss the UA is not operating in a predictable or planned manner.

5.3.1. LOSS OF UAS FLIGHT CONTROL (Lost link):

5.3.1.1. The UAS lost link procedures shall be initiated which shall automatically cause the UAS to climb to its ceiling altitude and return to and land at the launch site. If positive control of the UAS cannot be maintained and the UAS is leaving the operation area or the UAS poses a risk to life and/or property, the RPIC will continue to attempt to reestablish the link and notify the flight crew and ATC. In the event of a lost link during flight the RPIC will document the lost link in their flightlog.

5.3.1.2. LOSS OF GPS SIGNAL Should the UAS lose GPS signal during autonomous operations, the RPIC must command the UAS into manual mode until GPS signal can be reacquired. If GPS signal cannot be reacquired the RPIC will return the aircraft to home as soon as practical.

5.4. Loss of Visual Contact. If visual contact with the UAS is lost, unless special circumstances dictate, the RPIC shall command the aircraft into a hover mode and the RPIC and/or Visual Observer shall try to re-establish visual contact. If visual contact cannot be re-established within a reasonable amount of time determined by the RPIC, then lost link procedures shall be executed.

5.5. Loss of UAS Power (Engine Failure)/UAS Crash. In case of an equipment failure, the UAS will not be able to maintain flight. Flight Team Members will immediately attempt to locate the UAS, assess the scene for injuries, and render first aid if necessary.

5.6. Flight Termination. The intentional and deliberate process of performing controlled flight into terrain (CFIT). Flight termination must be executed if all other contingencies have been exhausted, and further flight of the aircraft cannot be safely achieved, or other potential hazards exist that require immediate discontinuation of flight.

5.7. Accident Notification and Investigation: All in flight accidents and incidents involving fatalities, injuries, property damage, and lost links shall be reported to the Division Director or designee immediately for appropriate assistance with guidance. In the event of an accident the RPIC is responsible for reporting the accident to the appropriate agency. The NTSB, FAA Part 107 and PAO COA all have different time frames and criteria for UAS incident reporting. In addition to the steps below RPICs shall submit a Qualtrax IR/CAR workflow.

5.7.1. IAW 49 CFR §830.5, the RPIC shall immediately contact the NTSB's 24-hour Response Operations Center (ROC) at 844-373-9922 when an aircraft accident or any of the following listed serious incidents occur, flight control system malfunction or failure, in-flight fire, aircraft collision in flight, damage to property, other than the aircraft, estimated to exceed \$25,000 for repair (including materials and labor) or fair market value in the event of total loss, whichever is less.

5.7.2. If the flight occurred under FAA 14 CFR § 107 the RPIC, within 10 days, must report to the FAA via the DroneZone portal any operation in which any of the following conditions



apply, serious injury to any person or any loss of consciousness; or damage to any property, other than the small unmanned aircraft, unless one of the following conditions is satisfied: the cost of repair (including materials and labor) does not exceed \$500; or the fair market value of the property does not exceed \$500 in the event of total loss.

5.7.3. If the flight occurred under FAA 14 CFR §91 PAO COA the RPIC, within 24 hours, must provide initial notification to the FAA via email at 9-AJV-115-UASOrganization@faa.gov and via the CAPS forms (Incident/Accident) if the accident meets the following criteria:

5.7.3.1. Fatal injury, where the operation of a UAS results in a death occurring within 30 days of the accident/mishap.

5.7.3.2. Serious injury, where the operation of a UAS results in: hospitalization for more than 48 hours, commencing within 7 days from the date of the injury was received, a fracture of any bone (except simple fractures of fingers, toes, or nose), severe hemorrhages, nerve, muscle, or tendon damage, involving any internal organ; or involves second-or third-degree burns, or any burns affecting more than 5 percent of the body surface.

5.7.3.3. Total unmanned aircraft loss.

5.7.3.4. Substantial damage to the unmanned aircraft system where there is damage to the airframe, power plant, or onboard systems that must be repaired prior to further flight.

5.7.3.5. Damage to property, other than the unmanned aircraft.

5.7.3.6. 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 lost control link event resulting in fly-away, or execution of a pre-planned/unplanned lost link procedure.

6. Training and Standardization:

The Quality Division shall review and approve a training curriculum and records to assess the knowledge, skills and abilities of RPICs and Visual Observers requiring additional training certifications ensuring satisfactory compliance with this policy.

6.1. Remote Pilot in Command (RPIC) training requirements:

6.1.1. A RPIC may be authorized to operate more than one type of UAS as long as he/she is trained and current in each individual model. The RPIC may only operate one UAS at a time.

6.1.2. The RPIC shall show competency in basic aeronautical knowledge as it relates to the use and operation of UAS assets. The RPIC shall pass an initial aeronautical knowledge test at



an FAA-approved knowledge testing center or comply the 14 CFR Part 107 protocols for a licensed and current 14 CFR Part 61 pilot. The basic aeronautical knowledge training, at a minimum shall include:

- 6.1.2.1. FAA rules pertaining to UAS flight operational limitations;
 - 6.1.2.2. All aspects of 14 CFR Part 107;
 - 6.1.2.3. Knowledge of the rules and responsibilities described in 14 CFR 91;
 - 6.1.2.4. All aspects of Texas Government Code 423 and 2205;
 - 6.1.2.5. Crew Resource Management;
 - 6.1.2.6. Mission planning requirements for establishing the Mission AOR and Perimeter;
 - 6.1.2.7. Mission briefing requirements to include Division's approved checklists and Manufacturer's recommendations;
 - 6.1.2.8. Mission debriefing requirements; and
 - 6.1.2.9. Any other specific responsibilities required by the Division Director to accomplish the Division's mission.
- 6.1.3. The RPIC shall show competency operating the specific UAS model in flight including emergency procedures. The RPIC's proficiency shall be evaluated by the Division Director or his/her designee who has mastered aeronautical knowledge and training as it pertains to the use of an unmanned aircraft.
- 6.1.4. The RPIC shall show competency communicating and crew resource management with the flight team members (Visual Observer and Remote Pilot) demonstrating satisfactory communications between team members. The RPIC's communications will be evaluated at all stages of the flight continuum: pre-flight inspection, flight operations, and post flight procedures.
- 6.1.5. The RPIC shall demonstrate competency in all the technology and support equipment associated with any assigned mission to take advantage of the full capabilities of the UAS. The RPIC's proficiency shall be evaluated by the Division Director or designee.
- 6.1.6. Upon RPIC approval and before flying missions section management shall issue authorization memos to be signed by the trainee, section management, and Quality Director. Authorization memos will document:
- 6.1.6.1. The RPIC has demonstrated competency operating unmanned aircraft.
 - 6.1.6.2. The RPIC has met all training requirements to operate unmanned aircraft.
 - 6.1.6.3. The RPIC is authorized to operate UAS assets while carrying out his/her duties in an official capacity.
- 6.1.7. The memorandum shall be issued in compliance with the current version of the HFSC Quality Manual.

6.2. RPIC Recurrency and Proficiency

- 6.2.1. In order for an RPIC to maintain their active flight status, every 180 days, the RPIC shall conduct a minimum of 1 flight for a duration of no less than 20 minutes which shall consist of a 2 take offs, 2 landings and 1 battery change. The RPIC shall conduct and document a preflight inspection and complete their flight log in Qualtrax.



6.3. UAS Observer Training requirements:

- 6.3.1. Visual Observers are not required under Part 107 (except during night operations); however, it is highly encouraged for a UAS Visual Observer to assist the RPIC during all missions for risk mitigation purposes.
- 6.3.2. Visual Observers may be both formally trained and designated or can be chosen ad hoc for a specific mission under Part 107. Ad hoc Visual Observers are selected on a case by case basis and no memoranda or documentation retention on their training is required. This is allowed for daytime operations only.
- 6.3.3. Designated Visual Observer's training is applicable to all UAS models.
- 6.3.4. Designated UAS Visual Observers shall have completed sufficient training to efficiently communicate pertinent in-flight observations with the RPIC so that the UAS aircraft remains clear of conflicting air traffic and obstructions.
- 6.3.5. This training, at a minimum, includes:
 - 6.3.5.1. Knowledge of the supporting tasks described 14 CFR 107 with respect to maintaining Line of Sight, and effective communication.
 - 6.3.5.2. Knowledge of the supporting tasks described in 14 CFR 91: Operating Near Other Aircraft; Right-of-Way Rules; and Basic VFR Weather Minimums.
- 6.3.6. If formal training is not available for UAS Visual Observers, the RPIC is responsible for briefing the ad hoc observer and ensuring the understanding of the role and the supporting tasks in C (5.) of this section to the observer.

7. Position Responsibility and Duties:

7.1. Remote Pilot-in-Command (RPIC)

- 7.1.1. The RPIC is solely responsible for everything the flight team does or fails to do.
- 7.1.2. The RPIC is authorized to refuse any flight request based on current meteorological conditions, physiological conditions, or for any other reason that RPIC believes will affect the safety of the flight. Should the RPIC refuse a flight for any reason, they shall inform the DPC as soon as possible of such refusal and the reason for refusal.
- 7.1.3. While the UAS is in flight, the RPIC is authorized and responsible for making all decisions regarding use of the UAS including, but not limited to, direction of UAS, duration of flight time, capabilities of the UAS, and use of affixed certified equipment.
- 7.1.4. The RPIC is responsible for the safe conduct of all flights, including, but not limited to:
 - 7.1.4.1. Flight planning and preparation, including pre-flight inspections of UAS and equipment.
 - 7.1.4.2. Contacting communications via email or phone with pertinent mission information.
 - 7.1.4.3. Weather briefing.
 - 7.1.4.4. Flight operations, including course, air speed, altitude, and duration.
 - 7.1.4.5. Landing zone selection.
 - 7.1.4.6. Go/no-go and landing judgments with regard to weather minimum or other criteria.



- 7.1.4.7. All Very High Frequency (VHF) air-to-air, air-to-ground, Air Traffic Control (ATC) communications, and any other radio communications.
- 7.1.4.8. Timely reporting of new or previously unknown hazards to safe flight encountered.
- 7.1.4.9. Determination of controlled airspace compliance and the controlled airspace status in an appropriate app (B4youfly or equivalent). When necessary, seeking authorization and waivers to fly missions.
- 7.1.4.10. Post-flight inspection, to include assuring batteries are recharged and to ensure the duty aircraft is ready for the next mission.
- 7.1.4.11. After each deployment, maintaining and making appropriate entries in any documentation.
- 7.1.5. Flight Operations –Operational Control –Remote Pilot-in-Command Authority:
 - 7.1.5.1. The RPIC shall initiate the flight only when confident the flight can be conducted safely.
 - 7.1.5.2. Determination of controlled airspace compliance and the controlled airspace status in an appropriate app (B4youfly or equivalent). When necessary, seeking authorization and waivers to fly missions.

7.2. UAS Visual Observer: Assistance shall include, but not be limited to:

- 7.2.1. Performing assignments assigned by a RPIC.
- 7.2.2. Assisting the RPIC in the safe conduct of all flights, including but not limited to:
 - 7.2.2.1. The Observer shall assist in see-and-avoid operations of the UAS. The Visual Observer shall remain in contact with the RPIC and communicate any obstacles the aircraft might encounter.
 - 7.2.2.2. If the flight becomes a hazard to ground personnel or other aircraft, the Visual Observer shall immediately notify the RPIC.
 - 7.2.2.3. During any phase of flight, if the Visual Observer notices a malfunction with the aircraft, he should immediately notify the RPIC.

7.3. UAS Inspections:

- 7.3.1. Before every flight, the RPIC is responsible for pre-flight inspections of the UAS according to the pre-flight checklist, and manufacturer’s recommendations.
- 7.3.2. Any anomalies found by the RPIC shall be fixed before any flight is conducted.
- 7.3.3. After every flight, a post-flight inspection shall be conducted by the RPIC according to the post-flight checklist and any manufacturer’s recommendations.

7.4. UAS Checklist:

- 7.4.1. There shall be a checklist generated for each phase of flight: Pre-flight, Run-up, Take-off, Emergency Landing, and Post-flight.
- 7.4.2. The RPIC shall not deviate from a checklist.
- 7.4.3. The Division Program Coordinator is responsible for making sure all checklists are up-to-date and current for each aircraft make and model.



8. Reporting Requirements:

8.1. Flight Log Software: The AOD Chief Pilot shall be responsible for standardization of flight log requirements pursuant to FAA regulations and Texas Government Code 423 and 2205.

8.2. A flight log shall be completed following every UAS flight including maintenance checks and training flights. If the situation of the mission does not allow for immediate entry of the flight data into Qualtrax, then the information shall be recorded within 5 days.

8.3. Reporting:

8.3.1. In compliance with the Texas Government Code, Article 423.008:

No later than January 15th of each odd-numbered year, HFSC shall make data available to HPD for reporting information pertaining to the preceding 24 months, including:

8.3.1.1. The number of times UAS assets were used, organized by date, time location and types of incidents and types of justification for use;

8.3.1.2. The number of criminal investigations aided by the use of an UAS and a description of how the UAS aided each investigation;

8.3.1.3. The number of times a UAS was used for a law enforcement operation other than a criminal investigation, the dates and locations of those operations, and a description of how UAS aided each operation.

8.3.1.4. The type of information collected on an individual, residence, property, or area that was not the subject of a law enforcement operation and the frequency of the collection of this information; and

8.3.1.5. The total cost of acquiring, maintaining, repairing and operating or otherwise using each UAS.

HFSC shall retain the information for the written report for public viewing.



DRONE CHECKLIST

PACKING CHECKLIST

- Aircraft
- Flight batteries (fully charged)
- Controller (fully charged)
- Tablet (fully charged, adequate memory space)
- Mini SD cards
- Propellers (and extra set)
- Tablet cables
- sun shield

MISSION PLANNING

- Check drone geofencing
- check FAA flight restriction in AirMap
- Check weather forecast
- Obtain authority for mission (Airmap)
- Check system for updates
- Determine AOR

SITE PREP

- Check Site of obstructions (trees, powerlines, elevation changes, buildings)
- Check weather suitability (wind, precipitation)
- Set minimum of 3 control flags maximum of 5
- Set long distance control tape (yellow band)
- Set vertical control board

PREFLIGHT INSPECTION

- Airframe (no cracks or damage)
- Battery (no swelling or damage)
- Propellers (no cracks or chips)
- Motors (clear and no damage)
- Camera and gimbal (clean and free)
- Controller (tablet plugged in antenna extended)
- Internet connection on hotspot.

FLIGHT PREP

- Power on controller and aircraft
- Short reconnaissance flight to help determine mission elevation
- Set double grid pattern mission in Capture
- Determine and set mission elevation (between 35-60 ft)

- Press start wait for all green checks
- Start mission

POST FLIGHT

- Download images from drone to tablet
- Power down and stow all equipment
- Retrieve and stow all distance controls
- Ensure preflight form complete
- Ensure expected images download, double check for correct exposure
- Upload images to PixCloud and process when back on highspeed Wifi
- Enter flight details in Qualtrax workflow