

Ventura County Sheriff's Office

Unmanned Aircraft Systems Team (UAST)

Unmanned Aircraft Systems Operations Manual



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PREFACE

The following procedures are provided to ensure a safe operating environment for personnel assigned to the Unmanned Aircraft Systems Team (UAST), department personnel in the area of UAS operations, and the citizens of Ventura County. Safety will always be the primary concern for UAS operations.

MISSION STATEMENT

The members of the Ventura County Sheriff's Office Unmanned Aircraft Systems Team (UAST) shall provide aerial observation support for the Sheriff's Office and other law enforcement and public safety entities within Ventura County. Missions will be accomplished efficiently and safely while respecting the law and the privacy of the citizens we serve.

1.0 Administration

1.1 Operations Manual

- 1.1.1 The policies and procedures contained in this manual are issued under the authority of the Sheriff. As such it is an official document of the agency.
- 1.1.2 The manual is not intended to be all-inclusive, but as a supplement to other agency guidelines, Federal Aviation Regulations, aircraft manufacturers' approved flight manuals, etc....
- 1.1.3 The manual has been written to address unmanned aircraft operations as they existed at the time of drafting. Equipment, personnel, environment (internal and external), etc., change over time. It is essential that this manual be reviewed and updated on a continual basis. At a minimum, the entire manual will be reviewed annually and any changes will be communicated to all affected personnel.
- 1.1.4 A copy of this manual will be issued to each member of the UAST. A copy (electronic or paper) will be present during all UAS operations.

1.2 Organization

- 1.2.1 The UAST shall be comprised of personnel assigned by the Sheriff and/or his designee and may include pilots, observers and others as deemed necessary.
- 1.2.2 Aviation operations are under the direct command of the UAST Captain and the UAST Team Leader (Sergeant).
- 1.2.3 UAST will be comprised of full-time and part-time personnel trained in UAS operations and holding a collateral assignment with the UAST.

1.3 UAST Personnel

- 1.3.1 **The UAST Captain** serves as the officer-in-charge of the unit and is responsible for the overall management of the operation.
 - 1.3.1.1 Given the technical nature of aviation, the UAST Captain may, at his discretion, assign responsibility for UAS operations to any member of UAST with the knowledge, skills, and abilities to safely and effectively manage the operation.
- 1.3.2 **UAST Team Leader/ Chief UAS Pilot**

- 1.3.2.1** The UAST Captain shall assign a subordinate (Sergeant) to serve as the supervisor/team leader of the UAST.
- 1.3.2.2** At the discretion of the UAST Captain, one UAS pilot shall be designated as the chief UAS pilot who shall serve as the supervisor of aviation operations; to include budget preparation, personnel selection, training, etc.
- 1.3.2.3** The UAST Team Leader shall appoint an assistant team leader to perform supervision duties in his absence.

1.3.3 UAST Pilots

- 1.3.3.1** To be considered for selection as a UAS pilot, applicants must be in good standing with the Ventura County Sheriff's Office and meet any other standards as imposed by the UAST Captain.
- 1.3.3.2** A UAS pilot's primary duty is the safe and effective operation of the Sheriff's UAS in accordance with manufacturers' approved flight manual, FAA regulations, and agency procedures. Pilots must remain knowledgeable of all FAA regulations; aircraft manufacturer's flight manual and sheriff's office policies and procedures.
- 1.3.3.3** Pilots must maintain at a minimum a valid FAA Part 107 certificate.
- 1.3.3.4** In order to fly a day mission (other than flights required for initial training or currency) pilots must have completed three (3) currency events within the previous 90 days. Currency events include landings, takeoffs, and simulator flights.
- 1.3.3.5** Night missions require the same as above, but the currency events must be completed at night. A simulator may not be used to complete the currency.
- 1.3.3.6** UAS Pilots may be temporarily removed from flight status at any time by the Sheriff or his designee, for reasons including but not limited to performance, proficiency, etc. Should this become necessary, the pilot will be notified.

1.3.4 UAST Flight Observers

- 1.3.4.1** The UAST observer's primary function is to act as an airborne operations commander, coordinating operations between the UAS and ground personnel.

1.3.4.2 The UAST observers must have attended a safety briefing prior to a mission and understand their responsibilities set forth by the pilot in command (PIC).

1.3.5 Non UAST Flight Observers

1.3.5.1 Any employee of this department, who is not a member of the Sheriff's UAST and has watched the observer training video as well as signed the attestation form, can be selected as a non UAST flight observer.

1.3.5.2 All non UAST flight observers must attend a safety briefing conducted by the PIC prior to each mission. The non UAST observers must understand the importance of communications with the PIC and ground personnel of any hazards that could affect the safety of the flight.

1.3.6 Air Boss

1.3.6.1 The UAST air boss serves as the person in charge of UAS operations when multiple aircraft are deployed in the air and on the ground. This includes the launching and landing of aircraft as well as assigning altitudes and locations to each aircraft.

1.3.6.2 No pilot will deviate from the instructions of the air boss unless in an emergency.

2.0 Safety Policy

2.1 Commitment to Safety

2.1.1 The Ventura County Sheriff's Office is committed to having a safe and healthy workplace, including:

1. The ongoing pursuit of an accident free workplace, including no harm to people, no damage to equipment, the environment and property.
2. A culture of open reporting of all safety hazards in which management will not initiate disciplinary action against any personnel who, in good faith, disclose a hazard or safety occurrence due to unintentional or intentional conduct.
3. Support for safety training and awareness programs.
4. Conducting regular audits of safety policies, procedures, and practices.
5. Monitoring the UAS community to ensure best safety practices are incorporated into the organization.

- 2.1.2** It is the duty of every agency member with UAS responsibilities to contribute to the goal of continued safe operations. This contribution may come in many forms and includes always operating in the safest manner practicable and **never taking unnecessary risks**. Any safety hazards, whether procedural, operational, or maintenance related should be identified and relayed to the team as soon as possible. Any suggestions in the interest of safety should be made to the UAST Captain or Team Leader without reservation.
- 2.1.3** If any member of UAST observes or has knowledge of an unsafe or dangerous act committed by another member, the UAST Captain or Team Leader shall be notified immediately so that corrective action may be taken.

2.2 UAST Team Leader / Chief UAS Pilot

- 2.2.1** The Team Leader / Chief UAS Pilot is responsible for the following:
1. Ensuring all UAS operations personnel understand applicable regulatory requirements, standards and organizational safety policies and procedures.
 2. Observe and control safety systems by the monitoring and supervision of UAS Pilots and Observers.
 3. Measure Pilot / Observer performance compliance with organizational goals, objectives and regulatory requirements.
 4. Review standards and the practices of agency personnel as they impact flight safety.
 5. The Chief Pilot will ensure that the safety officer receives the proper training to fulfill the duties of this role.

2.3 Flight Safety Officer

- 2.3.1** One member may be designated as the flight safety officer. This position will be in addition to other duties.
- 2.3.2** Duties of the Safety Officer may include:
1. Copy and circulate pertinent safety information.
 2. Assist the chief pilot in debriefing training sessions with an emphasis on safety concerns.
 3. Prepare a monthly safety briefing that contains, at a minimum, all reported safety related problems and corrective actions taken. If there were any in-flight problems, the proper procedures for handling that problem will be discussed.
 4. It is emphasized that safety is the responsibility of all members, not just the safety officer.

2.4 Safety Training

- 2.4.1** All new members shall receive training in the following prior to serving in an operational capacity:
1. Agency commitment to safety.
 2. Agency policy and procedures.
 3. The member's role in safety.
 4. Identifying and reporting hazards and occurrences (see something say something).
 5. Applicable emergency procedures.
- 2.4.2** All safety training shall be documented. The training records will be maintained in the members training file.

2.5 Safety Stand Down

- 2.5.1** A safety stand-down will be conducted annually. During the stand down, all UAST members will be required to attend and review the agency's safety program. During the stand down, management and UAST members will solicit changes to this manual, identify potential hazards, update emergency procedures, and conduct safety training.
- 2.5.2** All normal operations will be suspended during the stand down to ensure that all UAST members are focused on the safety program.

2.6 Medical Factors

- 2.6.1** Each UAST member shall report for duty rested and emotionally prepared for the task at hand.
- 2.6.2** Physical illness, exhaustion, emotional problems, etc., can seriously impair judgment, memory and alertness. The safest rule is not to act as a flight crew member when suffering from any of the above. Crew members are expected to ground themselves when these problems could reasonably be expected to affect their ability to perform flight operations.
- 2.6.3** A self-assessment of physical condition shall be made by all UAST members prior to and during flight operations.
- 2.6.4** No UAST member shall participate in flight operations in any manner within eight (8) hours of having consumed any alcoholic beverage, while under the influence of alcohol, or while having an alcohol concentration of 0.04 or greater in a blood or breath specimen (FAR 91.17).

3.0 Training

- 3.1 Objective** - The key to continued safe operations is maintaining a professional level of aviation competency. The first step in this process is establishing minimum qualifications for selecting aircrew. The second step involves training.
- 3.2 Instructor Pilots** - The UAST Captain and or Chief Pilot will designate instructor pilots who will organize proficiency exercises as well as ongoing training.

3.3 Training Plans

- 3.3.1** All members will have a training plan on file that outlines objectives for the upcoming year.
- 3.3.2** The approved training plan will be developed by the UAST Captain, Team Leader, and the instructor pilot.
- 3.3.3** Training objectives will vary depending on whether the member is new to UAST or an existing member. For new members, the training program will focus on familiarization with equipment and operational procedures. Existing members will focus on recurrent training. Objectives should challenge the member to increase their competency in the knowledge and skills necessary to perform.
- 3.3.4** Training plans shall be maintained in a file and reviewed at a minimum semi annually to ensure progress towards objectives.

3.4 Initial Training

- 3.4.1** Initial training will be conducted to provide new UAS pilots with skills sufficient to operate unmanned aircraft systems, including on specific systems.
- 3.4.2** New team members need to become familiar with UAS aviation operations, FAA regulations, the UAS and associated equipment.
- 3.4.3** Any new member who fails to successfully complete the initial training may be subject to removal from UAST.

3.5 Recurrent Training

- 3.5.1** Recurrent training for all UAS pilots will be conducted no less than twice each calendar year. The chief pilot/team leader is responsible for organizing these training sessions. Training will emphasize safety, respect for the law and privacy concerns, crew resource management, lessons learned from previous deployments, and the efficient completion of public safety missions.
- 3.5.2** All pilots must complete at least three (3) currency events each quarter (90 Days). The currency events must utilize an exemplar aircraft to those currently deployed by the Ventura County Sheriff's Office. Currency events include landings, takeoffs, and simulator events. Pilots who experience a lapse in currency must perform currency events, described above, under the supervision of a UAS instructor pilot. Pilots with lapsed currency may not participate in an actual public safety mission. Currency flights will be recorded in the pilots UAS logbook.
- 3.5.3** Recurrent training is not limited to actual pilot skills but includes knowledge of all pertinent unmanned aviation matters.
- 3.5.4** Failure to prove proficiency can result in removal from unmanned aviation responsibilities.

3.6 Use of Ventura County Sheriff's Office UAS for Training

- 3.6.1 VCISO unmanned aircraft can be used to meet the training objectives set forth in the UAST training plan.

4.0 General Operating Procedures

4.1 Requests for UAS Support

- 4.1.1 **Preplanned** requests for UAS support from bureaus within VCISO and from outside agencies should be submitted to the Sheriff or his designee (UAST Captain) for approval at least 5 working days in advance of the event.
- 4.1.2 **Immediate** requests in support of unplanned events shall be made via the Sheriff's Communication Center (SCC) Watch Commander. The decision to deploy UAST personnel will be made by the Watch Commander utilizing a UAS assigned to the nearest patrol station with a pilot who's on-duty.
- 4.1.3 **Immediate** requests in support of unplanned large-scale events such as major crime responses, natural disasters, etc. shall be made via the Sheriff's Communication Center (SCC) Watch Commander. The decision to deploy UAST personnel will be made by the Watch Commander after consultation with the UAST Captain or Chief Pilot.
- 4.1.4 **Long Term** requests for UAS support shall be made via the Sheriff's Communication Center (SCC) Watch Commander. The decision to deploy UAST personnel will be made by the Watch Commander after consultation with the UAST Captain or Chief Pilot.

4.2 Mission Priorities

- 4.2.1 Several requests for UAS support may be received simultaneously. Given the limited UAS resources it is necessary to prioritize calls for service.

In general terms, calls are prioritized as follows (listed in order of importance):

1. SWAT, Bomb Team, Haz-Mat Operations
2. In-Progress calls involving a threat to the safety of any person
3. Search and Rescue
4. Searches for fleeing suspects
5. Crime in progress calls
6. Reconnaissance
7. Traffic accident scene processing
8. Crime scene processing
9. Requests to support other public agencies
10. Photo flights

4.3 UAS Flights Outside County of Ventura

- 4.3.1 Planned flights outside of Ventura County need approval of the Sheriff or his designee.
- 4.3.2 All UAS flights outside of Ventura County will require the use of the blanket COA or receipt of an Emergency COA Addendum from the FAA.

4.4 Minimum UAS Flight Crew Requirements

- 4.4.1 Due to the nature of the law enforcement mission and the clear distinction between air crew responsibilities, the minimum crew on law enforcement missions during the day will be a pilot and an observer. Missions conducted at night will have a minimum of a pilot and two observers. **Under no circumstances will a pilot attempt to complete a UAS mission by themselves.**

4.5 UAS Flight Crew Responsibilities

4.5.1 UAS Pilot is Responsible for the Following:

- The pilot is directly responsible for and is the final authority over the operation of the UAS.
- Pilots have the absolute authority to reject a flight due to weather, aircraft limitations, physical conditions, etc. No member of the Sheriff's Office, regardless of rank, can order a pilot to make a flight when, in the opinion of the pilot, it would be unsafe to do so.
- Pilots are responsible for compliance with FAA regulations, this manual, and FAA COA conditions.
- Pilots shall be responsive to the requests of the observers in order to accomplish the mission.

4.5.2 Flight Observers are Responsible for the Following:

- The observers are responsible for the law enforcement aspect of the mission.
- The observers will assist the pilot with maintaining visual awareness of the airspace and advise the pilot of any imminent hazards including other aircraft, terrain, and adverse weather conditions.
- The observers shall remain alert for suspicious persons or activities on the ground and coordinate response by ground units.
- Certain observers that have been specially trained on how to properly communicate with an air traffic controller shall handle communications with air traffic control and other aircraft. Communications with ATC shall take priority over all other radio communications.

- The observers will avoid unnecessary communications with the pilot during takeoff and landing.

4.5.3 Crew Coordination Shall Include the Following:

- The pilot and flight observers will work together to form the crew which will ultimately accomplish mission objectives.
- The pilot and flight observers are the custodian of evidence. In this capacity, they are responsible for the safeguarding and proper processing of any evidence including, but not limited to, digital imagery to include still and video images.
- In the interest of safety, both the pilot and flight observers must be comfortable with any decision made while working as a crew. This begins when deciding whether to accept the mission and continues throughout the mission. If there is genuine concern on the part of either the pilot, or observers, the mission should not be accepted or should be terminated.
- Concern on the part of either crew member should be immediately expressed to the other member.
- Flight observers have the right, as well as the responsibility, to question the pilot whenever they do not understand something, or are uncomfortable with certain procedures, weather, etc. Conversely, the pilot should honestly answer any questions posed to them and not feel as though he/she is being challenged or threatened.
- **The crew concept and open communications will help to achieve safe operations.**

4.6 Flight Time Limitations

4.6.1 During any 24 consecutive hours, the total flight time of any pilot may not exceed 10 hours, which shall include any other unmanned flying by that pilot. A pilot's flight time may exceed the flight time limits if the assigned flight time occurs during a regularly assigned duty period of no more than 14 hours and:

1. If this duty period is immediately preceded by and followed by a required rest period of at least 10 consecutive hours of rest.
2. If the flight time is assigned during this period, which total flight time when added to any other unmanned flying by the pilot may not exceed 10 hours.
3. If the combined duty and rest periods equal 24 hours.

- 4.6.2** Each flight assignment under 4.6.1 must provide for at least 10 consecutive hours of rest during the 24-hour period that precedes the planned end of the agency flight.
- 4.6.3** When a pilot has exceeded the daily UAS flight time limitations in this section, because of circumstances beyond control of the agency or pilot, the pilot must have a rest period before being assigned or accepting an assignment for flight time, of at least:
1. Twelve (12) consecutive hours of rest if the flight time limitation is exceeded by more than 30 minutes.

4.7 Personal Protective Equipment

- 4.7.1** Service weapons shall be worn by UAS crew members authorized to carry such weapons.
- 4.7.2** Personnel in close proximity to UAS launches and recoveries will wear protective eyewear.

4.8 Preflight Actions

- 4.8.1** Thorough preflight planning and inspections are critical to safe operations.
- 4.8.2** Physical condition self-assessment by UAST flight crew members. If unable to perform flight duties, UAST crewmembers will decline the UAS operation request.
- 4.8.3 UAS Inspection Shall Include the Following:**
- Prior to initial deployment, a team member shall conduct a thorough preflight inspection of the UAS in accordance with the UAS flight manual and manufacturer's instructions.
 - All mission equipment will be tested and securely attached to the UAS prior to flight by the UAS team members.
 - All checklists contained in the UAS flight manual will be utilized by flight crew.
 - If any mechanical discrepancies are found, refer to section 6.0 "Maintenance."

4.8.4 Weather Observations Shall Include the Following:

- Prior to each deployment of the UAS, a team member shall obtain a full and detailed weather forecast for the area of operation.
- Frequency of weather forecasts will be determined by the severity of existing or forecasted weather during the planned operation.

- Weather minimums for UAS operations are contained in **Section 5.3** of this manual.

4.8.5 Documentation

4.8.5.1 Physical assessment, UAS inspection, and weather conditions will be documented prior to flight.

4.8.5.2 Flight logs and maintenance records will be retained in UAST for a period of one year.

4.8.6 Preflight Planning Shall Include the Following:

- It is the responsibility of the UAS pilot to familiarize themselves with all available information regarding the requested operation.
- It is the responsibility of the UAS pilot to conduct a safety briefing with a trained observer prior to any flight.

4.8.6.2 Pilots shall ensure that all required FAA notifications have been made prior to conducting any flights.

4.8.7 Ground Handling Shall Include:

- The UAS pilot is responsible for the operation of the UAS on the ground and in the air. Pilots will ensure that no unauthorized items are attached to the UAS prior to deployment. During deployment, adequate clearance from the UAS will be maintained.

4.9 Post Flight

4.9.1 A thorough inspection of the UAS will be conducted to ascertain if any damage was sustained.

4.9.2 If necessary, the UAS will be serviced immediately and returned in a deployment ready state.

4.9.3 All flight log entries will be completed immediately following the conclusion of the operation.

4.9.4 All flight operations will be documented on approved forms dictated by the type of event (Supplemental/ Memorandum/ Logbook).

4.9.5 Upon “repack” of the UAS, a team member will ensure that all items are returned to the transport case.

4.10 Data Collection and Storage

4.10.1 The collection of data to include, but not limited to, digital photographs, video, and IR images will be limited to the extent absolutely necessary to accomplish the mission.

4.10.2 Only data that meets legitimate training objectives or has evidentiary value will be retained after the mission has concluded. Any retained data will be safeguarded to protect the privacy of citizens who may

be depicted in the data. All other data will be destroyed via electronic deletion. **Digital flight logs are exempt from this requirement.**

- 4.10.3** All data as described above that has been retained will be subject to the VCSO records retention policy.

4.11 Constitutional Aspects of Aerial Searches

- 4.11.1** Aerial searches to inspect, or gather evidence of activity on the ground may, under some circumstances, intrude into a person's reasonable expectation of privacy and therefore come under the protection of the Fourth Amendment of the U.S. Constitution.
- 4.11.2** The Supreme Court has cautioned against assuming that compliance with FAA regulations will automatically satisfy Fourth Amendment requirements. Instead, the courts will determine whether the police aircraft is in the public airways at an altitude at which members of the public regularly travel. Other considerations include; the type of property (open fields versus curtilage); frequency of other aircraft flights over the area; steps taken to conceal property and activity from aerial observation and location of the observer(s) (altitude).
- 4.11.3** As a result of pertinent U.S. Supreme Court decisions, aerial searches of areas that can be reasonably interpreted to give rise to a reasonable expectation of privacy will be conducted no lower than 400' AGL. This section is not intended to prohibit aerial searches of areas that do not give rise to a reasonable expectation of privacy or searches pursuant to a search warrant to be conducted at altitudes below 400' AGL.

Additionally, in rare circumstances, extreme circumstances would also justify searches of "reasonable expectation of privacy" areas at an altitude below 400' AGL.

- 4.11.4** Members of the Ventura County Sheriff's Office UAST shall not use an unmanned aircraft system, or information obtained from an unmanned aircraft system used by another public agency, to surveil private property unless the law enforcement agency has obtained either of the following: (a search warrant based on probable cause, the expressed permission of the person or entity with the legal authority to authorize a search of the specific private property to be subjected to surveillance, or exigent circumstances where there is imminent threat to life or great bodily harm, including, but not limited to, fires, hostage crisis, barricaded suspects, "hot pursuit" situations if reasonably necessary to prevent harm to law enforcement officers or others and search and rescue operations).

Additionally, Title 14 (commencing with section 14350) part 4 of the California Penal Code, prohibits the use of an unmanned aircraft system solely for the purpose of monitoring activities protected by the First Amendment to the United States Constitution, or the lawful exercises of other rights secured by the United States Constitution, the California Constitution, and federal and state law.

- 4.11.5** Use of thermal imagers is passive and non-intrusive. In most circumstances, use of this device is not considered a search and does not require a search warrant. However, a 2001 U.S. Supreme Court decision (U.S. v. Kyllo), held that using sense-enhancing technology to obtain any information regarding the interior of a home that could not otherwise have been obtained without physical intrusion into a Constitutionally protected area, constitutes a search. Thus, police may not use thermal imagers to scan a private residence for heat characteristics (a tactic used to identify indoor marijuana grow operations) without first obtaining a search warrant. It does not prohibit their use on structures, or other areas not protected under the Fourth Amendment.
- 4.11.6** It is essential to note that case law in the area of UAS searches has not yet matured to the point that clear guidelines have evolved. In all cases of UAS deployment, reasonableness and respect for the privacy of individuals shall guide the actions of all UAST personnel.

4.12 Emergency Response Plan

- 4.12.1** During UAS operations, emergency situations may develop at any time. The primary concern in such incidents is the prevention of injury to persons on the ground and/or other users of National Airspace. Secondary concerns include protection of property and non-living entities on the ground.
- 4.12.2** For UAS accidents causing personal injury and/or property damage, the aircrew shall do the following where applicable:
- Immediately notify SCC and request assistance.
 - Render first aid to the injured.
 - Request notification of the UAST team leader/chief pilot, who will respond to the scene and coordinate the accident investigation efforts.
 - Notify the UAST Captain.
 - Request the FAA and NTSB be notified.
 - Survey the damage to the UAS and/or other property.
 - Prior to the arrival of the FAA and NTSB, ensure the UAS and its contents are moved only to the extent necessary to remove persons injured, protect the public from injury and/or protect the wreckage from further damage.
 - Provide any additional assistance or information requested by the FAA and NTSB.
 - Submit a detailed written report.
 - Provide Risk Management information to the property owners if known.

4.12.3 For ground emergencies, personnel shall:

- Evaluate the need for response of Fire or EMS.
- Provide first aid and contain the incident scene.
- Notify the UAST Captain, UAST Team Leader/Chief Pilot.

4.12.4 Pre-planning for emergencies.

- Prior to any UAS operation, the pilot and/or observer will identify the nearest emergency medical facility and brief all involved personnel on the emergency transportation plan.
- Safety response training will be conducted annually.
- All members will be current with regard to first aid training.

5.0 UAS Operations

5.1 General – UAS will be operated in accordance with this manual, Federal Aviation Regulations and the manufacturer’s manual.

5.2 Official Use Only

5.2.1 Personal use of the Ventura County Sheriff’s Office UAS is prohibited.

5.3 Data Breach Concerns

5.3.1 When an aircraft is not in use, it will be powered off to limit connectivity of Wi-Fi and cellular service.

5.3.2 During a firmware or any other type of update to an aircraft, the SD card will be removed in order to avoid the saved data from being accessed.

5.3.3 Any aircraft that require the pilot to use a cellular phone, I-Pad or any other device to view in flight data and camera views will be put into airplane mode or have its Wi-Fi disabled when flying over areas deemed critical infrastructure.

5.4 Weather

5.4.1 Flight into instrument meteorological conditions, thunderstorms, or other severe weather is prohibited.

5.4.2 No VFR UAS operations will be conducted beyond line of sight.

5.4.3 No aircraft will be operated when the ceiling is less than 1,000’AGL.

5.4.4 Weather minimums are not applicable to indoor operations.

5.5 Maximum and Minimum Altitudes

- 5.5.1 The maximum altitude for operations is specified in the airframe/mission specific COA.
- 5.5.2 The minimum altitude is one at which operations can be conducted without undue risk to persons or property on the ground.

5.6 Ground Safety

- 5.6.1 The pilot and flight observers must be constantly aware of dangers to ground personnel from moving rotors.
- 5.6.2 The pilot shall under no circumstances leave any unauthorized person in charge of the UAS controls while the engine is running. If it is necessary for the pilot to leave the controls of the UAS, the engine will be shut down and the controls deactivated.
- 5.6.3 Only mission essential personnel will be in proximity to UAS launch and recovery activities.
- 5.6.4 When operating over populated areas, the pilot will ensure that a “defined incident perimeter” exists to limit the potential of persons being present beneath the UAS flight path.

5.7 Night Operations

- 5.7.1 UAS team members should obtain the minimum altitude necessary to avoid obstructions in the operating area prior to nightfall if at all possible.
- 5.7.2 Because of field of view and distortion issues, night vision goggles may not be used as the primary means for visual observation duties. Such devices are permitted ONLY for augmentation of the observer’s visual capability. Visual observers must use caution to ensure the UAS remains within normal visual line-of-sight.
- 5.7.3 The use of lighting and/or IR beacons to identify the launch/recover area and UAS staff is highly recommended.

5.8 Miscellaneous

Should the pilot or flight observer develop fatigue or sudden illness, the operation/flight shall be terminated as soon as practical.

6.0 Maintenance – Properly maintained UAS are essential to safe operations. Compliance with the manufacturer’s scheduled maintenance, preflight inspections, post flight inspections, and the immediate repair of mechanical problems ensure the availability and safety of agency UAS.

6.1 Definitions

- **Aircraft Flight Log** – Flight record book kept with the aircraft.
- **Preventative Maintenance** - Simple, or minor preservation operations or the replacement of small standard parts not involving complex assembly operations.

- **Scheduled Maintenance** - Periodic maintenance on aircraft at known intervals.
- **Unscheduled Maintenance** – Repairs to UAS in response to mechanical deficiencies.

6.2 Responsibilities

6.2.1 Maintenance Officer

- 6.2.1.1** One UAST member will be designated as the maintenance officer who will coordinate maintenance for the UAS. This assignment can be in addition to other duties.
- 6.2.1.2** If possible, maintenance will be scheduled when it will have the least impact on operations. The UAST Captain and the Chief Pilot will be notified of the operational status of the UAS.
- 6.2.1.3** The maintenance officer shall be responsible for keeping the UAS maintenance record updated.
- 6.2.1.4** The maintenance officer and chief pilot shall provide the UAST Captain with accurate projections regarding replacement of life-limited parts and upcoming maintenance schedules.

6.2.2 Pilots

- 6.2.2.1** Conduct or designate a thorough preflight inspection of UAS in accordance with the manufacturer's manual. The Discrepancy Reporting System shall be followed if problems are noted.
- 6.2.2.2** The UAS flight log shall be reviewed prior to flight and appropriate data entered at the conclusion of each flight.
- 6.2.2.3** The UAS pilot is the final authority on whether the UAS is airworthy.
- 6.2.2.4** Pilots are generally not authorized to order repair work or parts from the commercial vendor without prior approval. When exigent circumstances exist, pilots are authorized to order or make those repairs necessary to ensure the aircraft is operationally safe. Such repairs shall be reported to the UAST team leader/chief pilot as soon as practicable.
- 6.2.2.5** In accordance with Federal Aviation Regulations (FAR Part 43.3), pilots can perform preventative maintenance. All such work must be entered into the maintenance records.

6.3 Discrepancy Reporting System

- 6.3.1** Minor problems not requiring grounding will be noted on the UAS Flight Log and the maintenance officer will be notified.

- 6.3.2** Major problems requiring grounding will be noted in the Flight Log and a placard will be affixed to the UAS indicating it cannot be deployed.