City of Tigard Police Department

Small Uncrewed Aircraft Systems

Standard Operating Procedure (SOP) Manual

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1. Purpose
The following procedures are intended to promote safe, efficient, and lawful operation of all Small Uncrewed Aerial Systems (sUAS) operated by the City of Tigard (COT) Police Department (TPD). Regardless of the nature of the mission, safety is the primary concern of every operation.

2. Philosophy
The operation of sUAS has the potential to influence the resources available to city staff, informing actions and increasing efficiencies in many departments. This far-reaching technology may be used to protect the lives and property of citizens and first responders, improve situational awareness during emergency response, and enhance services provided to the community.

It is the responsibility of every participating COT employee to contribute to the goal of ongoing safe sUAS operations. This contribution may come in many forms and includes always operating in a legal and safe manner while avoiding unnecessary risks. All participants engaged in the operation of sUAS have a responsibility to identify and mitigate potential safety hazards related to procedures, operations, or maintenance before an incident might occur.
TPD is committed to providing the best services possible to our community by ensuring our sUAS will always be operated in a constitutionally and legally sound manner that respects and protects peoples' privacy and civil liberties. This means avoiding unneeded or unintended operation of sUAS and includes thoughtful consideration for personal privacy and public perception at all times.

3. Administration
The policies and procedures contained in this document are issued under the authority of the Chief of Police. As such, it is an official document of the City of Tigard Police Department. This sUAS Standard Operating Procedures Manual ("manual") is not intended to be all-inclusive, but rather to act as a supplement to department sUAS policy 613, FAA regulations and other documents, such as the user's manual provided by the manufacturer of the sUAS. This manual has been written to address sUAS operations as they existed when the document was drafted. Because an sUAS may be considered emerging technology, equipment, software, personnel, environmental conditions, regulations, etc., may change over time. Adaptive change management within the sUAS program involves a systematic approach to monitoring [TPD] organizational change and is a critical part of the risk management process for the operation of sUAS.

4. Protection of Rights and Privacy
Refer to Tigard Police Department policy 613 - Uncrewed Aerial Systems (UAS) Operations for a statement on privacy.

TPD has specific requirements for the handling of sensitive information and protecting privacy in accordance with existing state and federal laws, but none shall conflict with the minimum requirements contained herein. TPD procedures for handling sensitive information is attached as Appendix A. Refer to applicable department policies on sUAS for more information.

5. Definitions
Small Uncrewed Aircraft System (sUAS): An uncrewed aircraft of any type (weighing less than 55 pounds) that is capable of sustaining directed flight, whether pre-programmed or remotely controlled and all of the supporting or attached systems designed for gathering information through imaging, recording or any other means. For the purpose of this SOP, an

sUAS includes an "Uncrewed Aircraft System (UAS)," commonly referred to as a "drone", as defined by ORS 837.300

14 CFR Part 107 (Part 107): Federal Aviation Administration (FAA) regulations regarding Small Unmanned Aircraft Systems. The certificate for 14 CFR Part 107 is also called a "remote pilot certificate".

Aircrew Member: Department personnel designated and selected as either (Pilot in Command) "PIC;" a "Student Operator;" or any personnel operating, observing as a crewmember or maintaining an sUAS.

Certificate of Waiver: A certificate issued by the Federal Aviation Administration authorizing a deviation from any regulation specified in 14 CFR §107.205

Centralized Location: With respect to training, operations, flight hours, maintenance, and other logs as noted in this SOP, centralized location refers to an online repository of program information. The current centralized location for the TPD UAS Program is DroneSense.

FAR: Federal Aviation Regulations are rules published by the FAA that govern the use of any airspace above the ground within the United States of America.

Hazard: Something that has the potential to cause harm.

Occurrence: An unplanned safety related incident, including accidents or damage to aircraft or property.

Pilot in Command (PIC): Is an sUAS operator who is certified under CFR 14 Part 107, approved by the program manager, and who has met specified requirements of knowledge, training, and operational proficiency. The PIC is directly responsible for the safety and operation of the sUAS. The PIC is the sole person responsible for control of the sUAS and has the final responsibility and authority to conduct flight operations within the National Airspace System as defined by the FAA. A student operator may operate under the direct supervision of a PIC for training purposes as approved by the program manager.

Tactical Flight Officer (TFO): Is an aircrew member who takes on the responsibility of operating the payload (camera) of the sUAS, as well as coordinating and communicating with dispatch and resources on the ground during an incident.

Program Coordinator: The program coordinator is responsible for the overall direction and performance of the department sUAS program as defined by individual department policy. Refer to Section 6.2 for basic responsibilities of the program coordinator. A program coordinator will be assigned at the rank of sergeant of above.

Student Operator: An individual who has not yet earned a remote pilot certificate but is authorized to operate an sUAS by the program coordinator under the direct supervision of a PIC.

Visual Observer (VO): An individual who assists the PIC and/or the person manipulating the controls of the sUAS to see and avoid other air traffic or objects aloft or on the ground. The use of a VO provides an optional and additional means of airspace and obstacle deconfliction. .

Mission: A mission is defined as a flight that is not a training flight and has an official law enforcement purpose. An example of a mission is a flight conducted in search of a missing person, a block search for a suspect, or an overwatch flight to assist SWAT with the service of a search warrant. A mission is also a flight for the collection of evidence in a crime scene or crash reconstruction.

6. Organization
The organizational structure for the operation of the sUAS includes TPD personnel functioning in the roles of program coordinator, PIC, TFOs, VOs, and student operators.

6.1 Program Coordinator
The program coordinator is responsible for the overall direction and performance of the department sUAS program. The responsibilities of the program coordinator for each department include but are not limited to:
- Record keeping and reporting.
- Liaison with the FAA as needed.
- Reviewing and updating program policies and procedures as needed.
- Evaluating each sUAS based on use and replacement needs.
- Monitoring the sUAS community to ensure best practices are incorporated into the TPD's use and operation of sUAS.
- Establishing and maintaining a review process to monitor program objectives, aircrew member performance, proficiency and use of sUAS.
- Approve and remove aircrew members from flight status as needed. Any aircrew member may be temporarily removed from flight status at any time by the program manager for reasons including, but not limited to, performance or proficiency.

6.2 Pilot in Command (PIC)
The primary operational responsibility of the PIC is the safe and effective use of sUAS in accordance with the user's manual provided by the manufacturer, federal and state laws, and City policies and regulations. Ultimately, it is the responsibility of the PIC to ensure aircrew members meet current qualifications to operate an sUAS.

6.3 Tactical Flight Officer (TFO)
The primary operational responsibilities of the TFO are the operation of the payload (camera) of the sUAS, the coordination of patrol units, and communication with those units and dispatch. The TFO is an active member of the aircrew and will typically possess a Part 107 remote pilot certificate. The TFO can transition to the PIC of an additional flight to take over a point of observation from the PIC on an active flight, which is referred to as a "Leapfrog." The TFO will be responsible for:

- Relaying pertinent information about what the aircrew is observing with the sUAS to the units responding to the call,
- All aircrew radio traffic to dispatch
- Communicating with the PIC to gain the best possible point of observation over the call.
- Making sure the aircrew is video or screen recording (or sometimes both) the incident for documentation purposes.

6.4 Visual Observers (VO)
The role of a VO is to alert the PIC and the rest of the aircrew about potential hazards during sUAS operations. The use of a VO is mandatory only for night operations but is recommended

to enhance situational awareness during daylight operations as well. The PIC may use one or more VOs to supplement situational awareness and visual loss of sight responsibilities. If a visual observer is used during the sUAS operation, all the following requirements must be met:

- The PIC (manipulating the flight controls of the sUAS) and the VO must maintain effective communication with each other at all times.
- The PIC must ensure the VO is able to see the sUAS and the position of other aircraft in the manner specified in 14 CFR §107.31.
- The PIC and the VO must coordinate to do the following:
  - Scan the airspace where the sUAS is operating for any potential collision hazard; and
  - Maintain awareness of the position of the sUAS through direct visual observation.

In addition to the requirements specified above, VOs may also be asked to remain alert for suspicious persons or activities on the ground or in the air and coordinate response through the PIC and incident command.

6.5 Student Operators
A student operator may operate an sUAS under the direct supervision of a PIC for training purposes as approved by the program coordinator. A student operator must be accompanied by a PIC at all times while at the controls of an sUAS. A student operator is responsible for the safety and operation of the sUAS, however, the PIC has final authority over and responsibility for the sUAS at all times. Student operators may not operate an sUAS without PIC supervision until:

- All training requirements have been met
- They possess a Part 107 remote pilot certificate
- They are approved as a PIC by the program coordinator.

7. Equipment Storage and Maintenance
The TPD UAS Team shall store and maintain equipment in a location and manner approved by the program coordinator and in compliance with manufacturer guidelines. In addition, all participating personnel are equally responsible for maintaining the equipment and facility in a neat, clean and orderly fashion. The sUAS shall be stored in a manner intended to prevent or reduce the probability of damage, tampering, or operation by unauthorized individuals. If batteries or controllers were used by a team member, that member will ensure the batteries and/or controller is placed onto the specified charger at the end of their shift. Team members utilizing the UAS will not leave batteries or UAS inside the vehicle at the end of their shift, unless that team member confirms weather will not negatively affect the integrity of the batteries or UAS.

8. Training and Proficiency
Before an aircrew member can function as a PIC, they must complete the following steps to obtain the required certification and experience to operate a sUAS as a PIC.

1. Complete at least twenty (20) hours of training in FAA rule and regulations, to include practice tests, through an approved training course at TPD expense.
2. Pass the FAA Part 107 test and receive certification. TPD will pay for the first two attempts to pass the FAA Part 107 test. Further attempts will require consultation with the Program Coordinator for approval. Provide proof to TPD and COT Risk Management Department of certification.
3. Conduct a minimum of twenty (20) hours of flight under the guidance and supervision of a TPD PIC, either through field deployments or scheduled training.

4. Final check-off by PIC through approved program checklist for each sUAS deployed.

The program coordinator has the authority to change or waive the requirement for minimum hours of training based on demonstrated proficiency and written documentation of knowledge and experience of the PIC candidate. This would also apply if the team member already possesses a remote pilot certificate.

For ongoing training, all flights or exercises will be documented and count toward an aircrew member's training. Aircrew members shall have a minimum of ten (10) hours of ongoing training per calendar year. This training should include, but is not limited to the following topics:
- Department commitment to safety
- Member's role in safety
- Review of sUAS program
- Emergency safety procedures
- Scenario-based training
- Medical conditions affecting operations and self-assessment
- Airspace
- FAA regulations
- Deployment
- Maintenance, repair, and storage of airframes
- sUAS performance
- Weather

All PICs shall maintain operational proficiency of sUAS. Aircrew members without any documented flight time within a span of 180 days will demonstrate operational proficiency with PIC checklist before functioning as PIC on a real-world event. Aircrew members may demonstrate operational proficiency on a real-world response or exercise in the role of a student operator at the discretion of, and under the direct supervision of, a current PIC. The program coordinator shall determine the amount required training (flight time and/or instructive) to demonstrate operational proficiency. All training shall be documented in the aircrew member's file, maintained by the program coordinator or in a centralized system. It is incumbent on the aircrew member to ensure compliance and proper documentation of training and flight time. Failure to maintain or document operational proficiency can result in removal from sUAS responsibilities.

9. Authorized Uses of sUAS
See department sUAS policy 613 for authorized uses by department.

10. Exigency
The UAS Team will continually weigh the exigency of a deployment against the requirement to obtain a search warrant when feasible. The PIC is responsible for the continual assessment of the mission and if it remains exigent, or if a warrant is required. If the exigency of a mission appears to be diminishing, the PIC will assess whether to land the aircraft or to keep the point of observation while designating a warrant writer to begin the search warrant application process (based upon the circumstances of the case).

11. Flight Checklists, Logs, and Registration
Within the aviation community, the utilization of checklists and consistent sUAS documentation has significantly reduced the risk of aviation operations. As such, department PICs are required to complete and maintain the logs and checklists listed in the proceeding subsections.

11.1 Maintenance and Flight Logs
- Maintenance of the equipment will be handled by the designated program member.
- The program coordinator, or designee, shall follow the maintenance schedule in the user's manual provided by the manufacturer of the sUAS and maintain flight software/firmware as required.
- A maintenance log shall be established for each sUAS to track maintenance needs and repairs. The maintenance logs should be reviewed by the PIC before subsequent flights and updated after the last flight.
- Only if a mission is conducted-PICs shall complete a UAS Team Daily Activity Report (DAR) documenting the time, location, duration, purpose of flight, and type of drone.
- PICs shall update the UAS Team training flight log for all non-mission, training flight operations while on-duty.
- All maintenance records should be keep in the approved centralized location.

11.2 Pre and Post Flight Checklists
PICs are responsible for a thorough preflight inspection of the sUAS. Before and after each mission or training flight, the PIC shall:
- Conduct a thorough inspection of the sUAS in accordance with the user's manual provided by the manufacturer. If the manufacturer does not provide a preflight checklist, the PIC must adopt and use the checklist provided as Appendix B to this manual.
- Check for physical equipment or firmware/software discrepancies. Any physical equipment or firmware/software discrepancy that cannot be resolved and which has a potential impact on flight safety will override the deployment of sUAS, and any discrepancy shall be resolved before flight. If issues are unresolved the sUAS will be removed from operation until all discrepancies have been resolved.
- Conduct a post flight inspection of the sUAS and document any discrepancies in the sUAS' maintenance and appropriate flight log.

11.3 Registration
All sUAS used for TPD purposes shall be registered with the FAA and Oregon Department of Aviation. All TPD owned sUAS must also be recorded with Risk Management for insurance purposes. The program coordinator is responsible for ensuring all aircraft operated by the UAS Team is properly registered with the Oregon Department of Aviation and the FAA. [Registration of sUAS is required by both the Oregon Department of Aviation and FAA.]

12. Record Keeping and Reporting
The program coordinator has the responsibility for maintaining team records. Aircrew member files shall be reviewed annually and should contain:
- Copies of FAA certifications and expiration dates
- Training records
- Flight logs for aircrew members
- Flight and maintenance records for each sUAS.

The program coordinator will ensure flight logs for each PIC are compiled and maintained in a centralized location. A combined summary of City of Tigard Police Department flight logs will be submitted to the Oregon Department of Aviation by the program coordinator each year.

13. Identification
All TPD's sUAS will be labeled or marked in the following ways:

- FAA and state registration numbers will be adhered to the sUAS as required by state and federal law.
- sUAS will display obvious visible features identifying it as City of Tigard property, and these markings may appear as a colored label, sticker or covering (skin) on the sUAS.
- When selecting a color coding it should have a high contrast value and relationship between the markings and the production color of the sUAS.
- A contact phone number will be displayed on the hull of the sUAS.

14. Deployment Priorities/Response Procedures

All sUAS operations within controlled airspace shall be conducted in accordance with Part 107 or an approved Certificate of Waiver. Only a watch command, as defined in TPD Policy, has mission approval authority for operations but the PIC retains the final responsibility for the operation and safety of the sUAS. If requests for sUAS support are received simultaneously, they shall be prioritized with life safety as the highest priority. Field supervisors, command staff and officers will yield to the PIC's decision if the PIC decides the flight is either not safe or cannot be conducted according to the rules and regulations outlined in this manual, TPD Policy 613, the State of Oregon, or the FAA.

14.1 Deconfliction Procedures

When two or more sUAS are assigned to the same incident, all sUAS shall maintain a safe vertical and horizontal distance as coordinated by the aircrew on the incident. That buffer shall be no less than 50 feet, as long as the PICs of both aircraft are launching from the same elevation. All aircrew operating in the same incident shall monitor and maintain voice communication over a common frequency when possible or in person. Deconfliction is the responsibility of each PIC. The incident commander should consider the risk versus benefit prior to authorizing a multi-sUAS operation. The primary agency on an incident has authority over air operations for that incident.

14.2 Crewed/Uncrewed Aircraft Teaming

City of Tigard Police Department sUAS operations may only be conducted in the vicinity of crewed aircraft when authorized by the FAA. Crewed aircraft always have the right of way and must always be avoided. In the event that Life Flight, wildland firefighting aircraft, or other rescue aircraft are activated for use on an incident, sUAS flight operations in the area of the incident must be terminated immediately upon notification of their activation unless operation of sUAS is requested by the incident commander and meets FAA requirements. When sUAS missions are conducted with crewed law enforcement aircraft, the PIC of the sUAS and the crewed aircrew should be communicated on the same radio frequency for proper altitude deconfliction.

15. Emergency Procedures

Emergency procedures are specific to each sUAS type as designed by the manufacturer. It is the responsibility of the flight crew to be proficient with the sUAS operational manual provided by the manufacturer before any flight operations are conducted. Many sUAS have a number of failsafe options in the event of signal loss. These options include the setting of a Home Location, Return to Home height setting, Automated Hover, or Return to Home mode. The specific failsafe options available for each type of sUAS should be outlined in the documentation for that sUAS (operator's manual, checklists, etc.).

15.1 Return Home Settings

- Return Home location must be selected, programmed and verified on the system map prior to every launch.
- Return Home location shall be an open area, clear of all obstructions.
- Appropriate Return Home altitude must be selected & programmed to avoid the tallest obstacle between operating the area and Return Home location.

15.2 Lost Link
- If signal link is lost for less than 5 seconds, the PIC will activate Return Home on the controller and verify that the signal link can be regained prior to subsequent flight.
- If signal link is lost with the sUAS for more than 5 seconds, the following procedures will be followed:
  - a. Immediate notification to Air Traffic Control, if required. Provide last known location, altitude, direction of travel, expected behavior/flight path.
  - b. Immediately notify the incident commander or supervisor. Give last known location, direction of travel, expected behavior/flight path.
  - c. Verify Return Home location is clear of obstructions.
  - d. Attempt to regain signal (troubleshoot remote control antenna position, operator position, line of sight, battery, device, cable and app)
  - e. If signal is not regained, visually verify automated return of sUAS or initiate sUAS recovery/mishap procedure.
  - f. If signal is regained, notify Air Traffic Control if required and the incident commander, and initiate a precautionary landing to verify condition of sUAS system components.

15.3 sUAS Recovery/Mishap Procedure
- The PIC will immediately notify the incident commander or supervisor and provide estimated location of the downed sUAS.
- Notify Air Traffic Control (if applicable).
- The incident commander will assign sUAS recovery resources.
- The sUAS will be treated as evidence and not tampered with except for the extent to safely recover the sUAS. The sUAS will be impounded and Risk management notified with the proper forms completed.
- The program coordinator will assign an investigator with the technical knowledge to determine the cause of the crash. The investigation, at a minimum, will document the required information list under "Accident Reporting" in Part 107. The findings will be forwarded up the chain of command within seven (7) days of the crash.
- The sUAS will not be returned to service until the program coordinator has determined the operational proficiency of the PIC and the airworthiness of the sUAS.

16. Occurrence and Hazard Reporting
The program coordinator shall establish or identify a hazard and/or occurrence reporting system. All reported hazards and/or occurrences will be investigated pursuant to established department policies. All flight crew members are authorized to take action to correct a hazard if in that member's opinion, delay will result in accident or injury. Findings of the program coordinator during the investigation of a hazard report shall be disseminated to the UAS Team, should the information be deemed worthy of reporting.

17. Complaints and Media Inquiries
UAS Team members will follow TPD's established policies and procedures regarding complaints and media inquiries.

18. Storage of Media and Data
UAS Team members will follow TPD's established policies and procedures, in compliance with all legal requirements.