KNOXVILLE POLICE DEPARTMENT
KNOXVILLE, TENNESSEE

Standard Operating Procedure – Unmanned Aircraft (Drone)

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This is the standard operating procedure for the Unmanned Aircraft System (UAS), including the Drones as First Responder (DFR) program, of the Knoxville Police Department. It is developed in accordance with Federal Aviation Regulations, the Public Safety Aviation Accreditation Commission, and the Commission on Accreditation for Law Enforcement Agencies standards.

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Glossary of Terms

Aircraft Flight Log – Flight record book kept in the UAS storage case.

Certificate of Waiver or Authorization (COA) – Document issued by the Federal Aviation Administration that authorizes public aircraft operations in the National Airspace System (NAS). A certificate of waiver will also allow a small UAS civil operation to deviate from certain provisions of Part 107 if the Administrator finds that the proposed operation can be safely conducted under the terms of that certificate of waiver.

Civil Aircraft – All aircraft not public aircraft.

Control Station – The interface used by the remote pilot to control the flight path of the unmanned aircraft.

Currency – A requirement of a pilot to have recently demonstrated proficiency in knowledge and skill to perform safe and adequate flight. The pilot must have been quizzed and observed by someone designated by the department to evaluate their performance. Currency events include landings, takeoffs, and simulator flights. Pilots who experience a lapse in currency must perform their currency events under the supervision of a UAS Commander or Chief Pilot.

Data Communication Links – All links between the unmanned aircraft and the control station, which includes the command, status, communications, and sensor/payload links.

Drone First Responder (DFR) – Unmanned aircraft operated from docks at fixed locations throughout the city. These drones are flown beyond visual line-of-sight (BVLOS) by remote pilots typically in the Real Time Information Center (RTIC).

Digital Media Evidence (DME) – Digital recording of images, sounds, and associated data with probative value stored or transmitted in binary form. The term DME used in this document refers specifically to video and the metadata associated with that form of DME.

Federal Aviation Regulation, Part 107 – Small Unmanned Aircraft System – Regulations that apply to airman certification, and operation of civil small unmanned aircraft systems.

Model Aircraft – An unmanned aircraft that is capable of sustained flight in the atmosphere, flown within visual line of sight of the person operating the aircraft, and flown only for hobby or recreational purposes.

National Airspace System (NAS) – The common network of U.S. airspace — air navigation facilities, equipment, and services; airports or landing areas, etc.

Personally Identifiable Information (PII) 2 – Information that can be used to distinguish or trance an individual's identity, either alone or when combined with other personal information that is linked or linkable to a specific individual.

Presidential Executive Order 13688 – Federal Support for Local Law Enforcement Equipment Acquisition (EO)- Issued by President Barack Obama on January 16, 2015, established a Law Enforcement Equipment Working Group (WG). The WG established minimum requirements for agencies requesting Federal government funding or surplus property transfers for unmanned aircraft.

Presidential Memorandum: Promoting Economic Competitiveness While Safeguarding Privacy, Civil Rights, and Civil Liberties in Domestic Use of Unmanned Aircraft System (PM) – Issued by United States President Barack Obama on February 15, 2015, established requirements for Federal agencies using unmanned aircraft and for state and local agencies using Federal grant funds to acquire UAS.

Preventive Maintenance – Simple, or minor adjustments or the replacement of small standard parts not involving complex assembly operations.

Remote Pilot in Command (RPIC) – The remote pilot in command has the final authority and responsibility for operation and safety of a small UAS operation.

Scheduled Maintenance – Periodic maintenance on aircraft at known intervals.

Small Unmanned Aircraft – A small unmanned aircraft is an unmanned aircraft weighing less than 55 pounds, including everything that is on board or otherwise attached to the aircraft.

Transparency Portal – A public facing dashboard designed to publish flights conducted by DFR drones and field-deployed drones.

Unmanned Aircraft System (UAS) – An unmanned aircraft and its associated elements (including communication links and the components that control the unmanned aircraft) that are required for the safe and efficient operation of the unmanned aircraft in the NAS.

UAS Flight Crewmember – A UAS flight crewmember includes the remote pilot in command, person manipulating the flight controls of the sUAS and visual observers (VO). It may also include other persons as appropriate or required to ensure safe operation of the aircraft.

Unmanned Aircraft (UA) – An aircraft that is operated without the possibility of direct human intervention from within or on the aircraft. Also called Remote Piloted Aircraft and “drones.”

Unscheduled Maintenance – Repairs to aircraft in response to mechanical deficiencies.

Visual Line-of-Sight (VLOS) – The RPIC, the visual observer (if one is used), and the person manipulating the flight control of the small UAS must be able to see the unmanned aircraft throughout the entire flight in order to: (1) know the unmanned aircraft’s location; (2) determine the unmanned aircraft’s attitude, altitude and direction of flight; (3) observe the airspace for other air traffic or hazards; and (4) determine that the unmanned aircraft does

not endanger the life or property of another. This VLOS ability must be exercised throughout the entire flight of the small unmanned aircraft by either: (1) the visual observer; or (2) the RPIC and person manipulating the flight controls of the small UAS (if that person is not the RPIC).

Visual Observer – If used, a UAS flight crewmember designated by the RPIC to assist with the responsibility to see and avoid other air traffic or objects aloft or on the ground

Acronyms

AC – Advisory Circular
AFD – Airport Facility Directory
AGL – Above Ground Level
AIM – Aeronautical Information Manual
AMB – Air Mission Brief
AMC – Air Mission Commander
ARTCC – Air Route Traffic Control Center
ATC – Air Traffic Control
ATCT – Air Traffic Control Tower
ATM – Air Traffic Management
ATO – Air Traffic Organization
CFR – Code of Federal Regulations
CL – Checklist
COA – Certificate of Authorization
CTAF – Common Traffic Advisory Frequency
FAA – Federal Aviation Administration
FCC – Federal Communications Commission
FAR – Federal Aviation Administration Regulation
FOD – Foreign Object Debris
FSS – Flight Service Station
GCS – Ground Control Station
IAW – In accordance with
LEA – Law Enforcement Agency
NAS – National Airspace
NOTAM – Notice to Airmen
NM – Nautical Miles
NTSB – National Transportation Safety Bureau
OIC – Officer in Charge
PIC – Pilot in Command
RP – Remote Pilot
RPA – Remotely Piloted Aircraft
RPAS – Remotely Piloted Aircraft System

RTH – Return to Home
SMS – Safety Management System
SOP – Standard Operating Procedures
SVFR – Special Visual Flight Rules
TSA – Transportation Security Administration
UAS – Unmanned Aircraft System (includes the UAV, pilot, ground control station etc.)
UAV – Unmanned Aerial Vehicle (vehicle Only)
VFR – Visual Flight Rules
VLOS – Visual Line of Sight
VMC – Visual Meteorological Conditions
VO – Visual Observer

Mission Statement

1. The Knoxville Police Department is committed to using UAS and DFR in a responsible, lawful, and transparent manner. The Department's DFR drones are launched for limited duration and specific public safety missions. UAS will not loiter in order to passively collect data as part of a generalized surveillance platform. DFR drones do not perform facial recognition or collect ALPR data.

2. The Department shall not, without a warrant or without probable cause under an exception to the Fourth Amendment warrant requirement, attempt to compile or database data collected by an UAS in such a manner that the whole of a person's physical movements can be ascertained over consecutive days.

Purpose

3. The Knoxville Police Department Unmanned Aircraft System Team may provide aerial support during investigative missions, tactical response missions, or other emergencies in which there is a real and present danger to the community and property as outlined in Tennessee Code Annotated (TCA) 39-13-609. Uses include:
    a. To counter a high risk of a terrorist attack by a specific individual or organization if the United States Secretary of Homeland Security determines that credible intelligence indicates that there is such a risk;
    b. To prevent imminent danger to life where there is reasonable suspicion that, under particular circumstances, immediate action is needed;
    c. To provide continuous aerial coverage when law enforcement is searching for a fugitive or escapee or is monitoring a hostage situation;
    d. To provide more expansive aerial coverage when deployed for the purpose of searching for a missing person;
    e. To investigate motor vehicle accidents that occur within the traffic right-of-way or an area open to the public;
    f. Where a criminal offense has occurred on publicly owned property, as defined in § 6-54-127(b), or where the law enforcement agency has reasonable suspicion that a criminal offense has occurred on such property;
    g. At the scene of a fire investigation;
    h. To provide aerial coverage of public property, or private property with the consent of the private property owner, when deployed for the purpose of providing or enhancing security for an event open to the public, including, but not limited to, music concerts, athletic events, festivals, protests, and other outdoor events;
    i. To provide aerial coverage in case of a natural disaster when a state of emergency is declared; or
    j. To investigate the scene of a crime that is occurring or has occurred.

4. This policy is intended to provide personnel with assigned responsibilities associated with the deployment and use of an unmanned aircraft system (UAS) with instructions on when and how this technology and the information it provides may be used for law enforcement and public safety purposes in accordance with law.

Drone as First Responder (DFR)

5. UAS allow police departments to deliver lifesaving police, fire, and medical resources faster and more efficiently. UAS programs also provide situational awareness in dangerous and critical circumstances. The use of UAS allows officers to de-escalate confrontations and devise strategies to respond to calls for service. In addition to aiding in public safety missions, police UAS, including DFR aircraft, may be used to assist other City of Knoxville departments including, but not limited to, the Fire Department, Public Service Department, and Engineering department.

6. All Knoxville Police Department DFR pilots will hold a current FAA Part 107 remote pilot license. In addition to the Part 107 license, all DFR pilots will have completed a training course provided by a manufacturer approved instructor prior to operating as a pilot-in-command.

7. All Knoxville Police Department DFR pilots will have a digital copy of any applicable Certificates of Waiver or Authorization accessible at the ground control station during all flights.

8. The RTIC Supervisor will maintain:
    a. A current list of authorized DFR pilots
    b. A current list of approved sUAS (by registration number)
    c. Pilot qualification and training records
    d. Aircraft maintenance records
    e. Individual and monthly flight logs

9. Except as authorized by the RTIC Commander, all DFR flights will be piloted from within the physical location of the RTIC.

10. DFR pilots will typically be staff assigned to the RTIC. However, when authorized by the RTIC Commander, Knoxville Police Department UAS Team pilots who have been through DFR pilot training will act as supplemental pilots.

11. DFR pilots may deploy dock-based drones to support calls for service, enhance situational awareness, and provide real-time information to field personnel.

12. DFR resources may be deployed to any call for service when aerial coverage would be beneficial to the response, enhance officer or public safety, improve situational awareness, or assist in the efficient resolution of the incident.

13. The decision to deploy a DFR aircraft shall be based on the anticipated operational benefit of aerial coverage and the ability to conduct the flight safely and lawfully.

14. Prior to deployment, DFR pilots shall evaluate the proposed flight based on the call location, airspace considerations, weather conditions, aircraft airworthiness, available resources, and other relevant safety factors.

15. When a DFR aircraft is deployed, the pilot shall notify Dispatch and officers that the drone is responding to the incident. The pilot shall maintain appropriate communication with field personnel during the operation and shall notify Dispatch and officers when the drone has cleared the incident.

16. DFR operations shall minimize intrusion and be consistent with constitutional protections. DFR pilots shall not utilize drones for random surveillance or to monitor individuals or groups absent a legitimate law enforcement purpose tied to a specific incident, public safety concern, or authorized operation.

17. Each DFR deployment shall be documented in the RTIC daily activity log and any required flight-management system. At the conclusion of each call or need for aerial support, the DFR pilot shall complete all required call and flight documentation and publish the flight to the Transparency Portal. If extenuating circumstances prevent completion, these requirements shall be fulfilled before the end of the pilot's shift. Any delay beyond the end of the shift must be approved by the Special Services Captain or designee. Delayed publication beyond the end of the shift shall only be authorized for flights supporting an ongoing organized crime investigation, undercover operation, or tactical operation when publication could reasonably compromise the integrity or safety of the investigation or operation. Any such delayed flight shall be published no later than 30 calendar days after the flight unless approved by the Chief of Police or designee. Delayed publication does not relieve the pilot of the requirement to complete all call and flight documentation within the established timeframes. Video or data with evidentiary value shall be uploaded to Evidence.com in accordance with Department policy.

DFR Pilot Responsibilities

18. DFR pilots shall perform a remote pre-flight inspection on all available DFR drones at the beginning of their shift and before each subsequent flight.

19. DFR pilots will check current weather conditions and predicted weather conditions for the duration of their shift to confirm operational safety.

20. DFR pilots will review airspace in their assigned area of operation to include any NOTAMs and TFRs.

21. At the conclusion of each flight, the DFR pilot shall conduct a remote post-flight inspection of the aircraft and complete the post-flight log. The post-flight inspection can be utilized as the pre-flight inspection for the next flight of the same aircraft if it occurs during the same shift.
22. Ensure that any evidentiary video obtained by the DFR drone is saved to evidence.com.
23. Report any issues with aircraft to RTIC supervisor and place the aircraft out of service utilizing the Skydio DFR Command cloud-based software if necessary.
24. The DFR pilot-in-command has final authority to determine whether a flight may be conducted safely and shall not launch or continue a flight when conditions, equipment status, or other factors would make the operation unsafe or unlawful.

RTIC Supervisor Responsibilities

25. Coordinate staffing of DFR pilots in RTIC. The RTIC supervisor should be a certified DFR pilot. This will allow the RTIC supervisor to fill in as a DFR pilot when necessary.
26. Conduct periodic physical inspection of aircraft and docks and perform any required field level maintenance of the equipment.
27. Coordinate with Skydio Support personnel to ensure that any issues are resolved in a timely manner.
28. Perform necessary test-flights on any aircraft that has had maintenance, service, or repair.
29. Ensure DFR pilots complete required call and flight documentation and publish flight records to the Transparency Portal within the timeframes established by this policy. The RTIC Supervisor shall also ensure any delayed publication is authorized by this policy and is published within the required timeframe.
30. Ensure that reports are compiled for DFR usage and report to Command Staff when requested.

Function and Administrative Standard of the Unmanned Aircraft System Team

31. This policy is intended to promote the safe and efficient operations of the department's unmanned aircraft. It is not intended to be all-inclusive, but is a supplement to other department guidelines, Federal Aviation Regulations, aircraft manufacturers' approved flight manuals, etc. and is written in compliance with US Federal Aviation Administration regulatory compliance, TN State Law, and best practices as prescribed by the Public Safety Aviation Accreditation Commission.

32. This policy also serves as the KPD UAS Team's comprehensive operations manual. The goal of this policy and manual is to foster safe, legal, ethical, and cost-efficient operations, set clearly defined operational practices, and set parameters for decision-making. All members of the team will be provided a copy of the manual and will demonstrate an understanding of its contents through practices and operations. Members will also carry it with them during all UAS activities. Annual review of the content of this manual will be documented with each member of the team.

33. The Federal aviation regulations defines a small unmanned aircraft system (UAS) as the unmanned aircraft and its associated elements (including communication links and the components that control the small unmanned aircraft) that are required for safe and efficient operation of the aircraft in the national airspace system. Unmanned aircraft means an aircraft operated without the possibility of direct human intervention from within or on the aircraft.

34. The UAS Team will be staffed by members who are mindful of the balance between the Department's desire and obligations to protect and serve the community and the community's constitutional rights to privacy. The Knoxville Police Department is aware of citizens' concerns regarding unwanted intrusion into their personal lives by law enforcement.

35. The Knoxville Police Department's UAS Team will perform their missions with the highest emphasis on safety, ethics, and the rule of both state and federal laws in all aspects of the program's operation. The overall goal is to accomplish the mission utilizing risk management as a means of identifying, assessing and mitigating risks. The Knoxville Police Department recognizes no mission is so critical it would necessitate accepting risks that introduce hazards which cannot be mitigated or that require deviation from safety policies, procedures, training standards, or the prudent judgment of the aircrew. Further, no mission is so critical that unethical or legally questionable tactics are permitted. Members of the team will consistently emphasize safety through a systematic program of risk management, standardization, training and leadership. SAFETY, above all else, is the primary concern in each and every operation, regardless of the nature of the mission.

36. The UAS Team recognizes that for the public to accept and support the use of UAS, the agency must be transparent about the uses of the equipment as long as the impact does not place the mission or investigation in jeopardy.

37. Any complaint about the use or operation of the UAS will be filed through the department's Internal Affairs Unit. Complaints may also be made to the Federal Aviation Administration.

38. The UAS team will maintain liaison and working relationships with other agencies that operate inside the same airspace. This relationship will include conversations on

operations and best practices flying together, sharing information and polices, and conducting meetings and training as needed to make for a safer and more effective operation for all involved.

39. These agencies include, but are not limited to, the Knox County Sheriff's Office Aviation Unit, Life Star air ambulance, operations staff from both Downtown Island Airport and McGhee Tyson Airport, and the Federal Aviation Administration, both Nashville and Atlanta offices.

40. All media requests and relations will be handled in accordance with the Department's PIO SOP.

UAS Program Budget

41. The UAS team will decide annually the training and equipment needs for the upcoming fiscal year.

42. Funding for equipment and external training will be submitted by the UAS Team Commander on an annual basis. The Team Commander will then be responsible for expenditures of approved funds in accordance with policy and procedures.

Operational Standard

43. Operations will comply with any federal, state, local laws or regulations that apply to UAS to include those regulations established by U.S. Federal Aviation Administration including 14 Code of Federal Regulations (CFR), PART 107 for U.S. civil operations, applicable certificate(s) of waiver when required, under a blanket COA, or under a jurisdictional COA.

44. Authorized and appropriate uses of the UAS shall be compliant with TCA 39-13-609 and approved by the UAS Team Commander or their designee.

45. Examples of uses include, but are not limited to, searching for missing persons, situational awareness to assist incident commanders with understanding the scope of a critical incident scene, collecting imagery of crime scenes and traffic accidents scenes, searching for a fugitive, assisting the fire department, community outreach, providing a visual perspective for traffic/crowd control and safety, and support disaster response.

46. All UAS flights and missions will require supervisory review and approval from the UAS Team Commander or his designee. Mission Authorization will be performed in four steps:
    a. Preliminary review by team member,
    b. Preauthorization by Unit Commander or designee,
    c. Reassessment by team member once on scene, and

d. Reauthorization by Unit Commander or designee. Exigent circumstances must exist to deviate from this authorization.

47. Any decision to deploy the UAS will include consideration of the protection of citizens' civil rights and reasonable expectations of privacy. UAS operators and observers will ensure that operations of the UAS intrude to a minimal extent upon the citizens. UAS Operators will balance all operations with the need to accomplish the mission while maintaining public privacy and the freedom from intrusion.
48. When the UAS is being flown, the onboard cameras will be turned facing away from occupied structures to minimize inadvertent video or still images of uninvolved persons and will not conduct random surveillance activities. When consistent with safe operations, during transit, pilots should orient the main camera to minimize observation of areas unrelated to the authorized mission by keeping the main camera level with the horizon while in transit.
49. Pilots shall take responsible steps to limit UAS observation and recording to area and activities relevant to the authorized mission, navigation, or air safety. Pilots shall not intentionally focus the main camera on private areas unrelated to the mission.
50. Pilots shall not use a UAS to create vantage point for the purpose of seeing, hearing, or recording private activity that could not reasonably be observed by a person from a lawful public location, unless authorized by Tennessee law, a search warrant, or by probable cause with a recognized exception to the Fourth Amendment warrant requirement.
51. Pilots shall not utilize thermal imaging to view intimate details of private activity from the interior of a home or structure, unless authorized by a search warrant or by probable cause under a recognized exception to the Fourth Amendment warrant requirement. Nothing in this section prohibits a pilot from briefly viewing or recording areas incidentally captured during launch, landing, navigation, air safety maneuvers, or response to an authorized public safety mission, provided the pilot does not intentionally focus on private areas unrelated to the mission.
52. For flights and data collection that require a search warrant prior to flight pursuant to Tennessee State Law, the UAS Unit will seek the assistance of an IB detective for writing the warrant. The search warrant affidavit should include the following as a "data collection statement":
    a. The persons that will have the power to authorize the use of the unmanned aerial vehicle;
    b. The locations in which the unmanned aerial vehicle will operate;
    c. The time period for which the unmanned aerial vehicle will operate in each flight; and
    d. Whether the unmanned aerial vehicle will collect information or data about individuals or groups of individuals, and if so:

i. the circumstances under which the unmanned aerial system will be used;
ii. the specific kinds of information or data the unmanned aerial system will collect about individuals and how that information or data will be used, disclosed, and otherwise handled, including:
    1. The period for which the information or data will be retained;
    2. Whether the information or data will be destroyed, and if so, when and how the information or data will be destroyed.

53. Attaching weapons of any type or attaching the means of deploying weapons of any kind to an UAS aircraft is strictly prohibited. This includes any type of projectile, firearm, chemical agent, or electrical current weapon.

54. The use of an UAS aircraft, drone, or other substantially similar device itself, as a weapon, under any circumstances, is prohibited.

55. An officer qualified to operate an UAS aircraft, drone, or a substantially similar device, may be permitted to utilize an UAS aircraft, drone, or a substantially similar device for the purpose of remotely detonating a bomb or similar incendiary or explosive device. This would occur only under the supervision and direction of the Hazardous Devices Unit at incidents that the HDU is responding to and investigating.

Team Composition

56. The UAS Team is assigned to the Special Services Division of the Field Operations Bureau of the Knoxville Police Department. The Field Operations Bureau Commander appoints a Team Commander to supervise the team. The Team Commander reports directly to the Special Services Division Captain. Team members report to the Team Commander for issues pertaining to the team.

57. Members will be added to the UAS team as determined by the Team Commander and the Field Operations Commander or designee. Members may be added by means of a departmental posting or based on an individual's qualifications at the discretion of the Team Commander. As members are added to the team, they will be informed of their responsibilities, duties, and expectations to include long term achievement goals.

58. All training, flights, and certifications/licenses for each member of the UAS team will be documented by the member and made available upon request. All team members will maintain flight logs that include flight time and time flown as well as any time serving as Sensory Operator, Visual Observer, and Mission Coordinator. Team training and performance will be documented by the Team Commander.

59. The uniform for the UAS team will be the KPD training uniform or the team members' uniform of the day, as directed by the Team Commander. Each member will keep with them safety glasses, sunglasses, and reflective vests for personal protective equipment.

60. All team members will be required to attend monthly training, mission, and any additional training. Any absences must be approved by the Team Commander.

61. Each member of the Team shall undergo an annual performance evaluation conducted by the Team Commander or designee. This evaluation will serve as a record of the member's technical proficiency, operational safety record, and adherence to the professional standards outlined in this SOP. This process provides the necessary framework to ensure all personnel meet established standards.

62. All personnel must adhere to the following Team standards, in addition to the KPD Code of Conduct, to maintain membership on the Team.
    a. Professionalism: Team members must maintain the highest ethical standards and respect for privacy and security in all operations
    b. Technical Proficiency: Maintaining FAA Part 107 certification and completion of required FAA Part 107 currency every two years after certification. Additional flight proficiency testing may be conducted with all team members. Relevant testing will be determined by the Team Commander and Chief Pilot. Failure of a single flight proficiency test alone will not be grounds for removal. However, the Team Commander and Chief Pilot will coordinate with the team member on an appropriate improvement plan culminating in retesting. Failure of the retest may result in removal from the team.
    c. Operational Reliability: Attendance at monthly training and responsiveness to mission call-outs is required. Unexcused absence from more than one team training a year may result in removal from the team.
    d. Safety Compliance: Strict adherence to all safety protocols is required; any disregard for safety may result in immediate removal from the team.

63. The Team Commander will be appointed by the Field Operations Bureau Commander and approved by the Chief of Police. The law enforcement aspects of KPD unmanned aircraft operations are ultimately under the command and control of the UAS Team Commander. The Team Commander may delegate team responsibility to UAS team members.

64. While the Commander is not required to be a licensed pilot, they will be a sworn supervisor of the department who has the knowledge, skills, and abilities to safely and effectively manage the operation. The Commander is responsible for overall management and supervision of training and operations, which includes mission approval, budget preparation and control, personnel selection, etc.

65. The UAS Team Commander will also:
    a. Monitor / update FAA Waivers, as required;

b. Ensure UAS operations are conducted in accordance with waivers, this SOP, any applicable Federal Aviation Regulations and requirements, and Tennessee State law;
c. Ensure the maintenance of training, flight, and maintenance records for each Operator and Visual Observer, as well as individual aircraft;
d. Coordinate UAS training activities and missions;
e. Act as the primary point of contact between the agency and the FAA.

66. The UAS Team Commander may appoint a subordinate member of the team to serve as the Executive Officer and Chief Pilot for the team. This member should be the most experienced pilot on the team and possess the knowledge, attributes, and skills to manage the team in the Commander's absence.

67. Pilots must be employees of the Knoxville Police Department and their participation on the team must be approved by the UAS Team Commander and Field Operations Bureau Commander or designee.

68. A pilot's primary duty is the safe and effective operation of the agency's UAS in accordance with the manufacturers approved flight manual, FAA regulations, Federal, state, and local laws.

69. Team Pilots must maintain a valid driver license and valid FAA Remote Pilot Certificate (Part 107). They must also complete training in accordance with each aircraft manufacturing operating guidelines, pilot ground school, and KPD UAS training.

70. The Pilot in command is a pilot as previously described who is operating the aircraft at the time of flight, regardless of reason (training, mission, demo).

71. In order to fly a mission (other than flights required for training or currency), the PIC must have completed three (3) currency events within the previous 90 days. Currency events include landings, takeoffs, and simulator flights. Pilots who experience a lapse in currency must perform their currency events under the supervision of a UAS Commander or Chief Pilot. Lapsed currency flights may not be in support of an actual public safety mission.

72. The pilot-in-command (PIC) is directly responsible for and is the final authority over the operation of the unmanned aircraft. PICs have absolute authority to reject a flight based on weather, aircraft limitations, physical condition, etc. No member of any law enforcement agency, regardless of rank, can order a PIC to make a flight when, in the opinion of the PIC, it cannot be performed safely.

73. PICs shall be responsive to the requests of the sensor operator and/or visual observer.

74. PICs may operate camera and related controls at their discretion. The sensor operator will be ready to take control of the cameras at any time.

75. Other than camera controls, the PIC will have no other duty or responsibilities while operating the aircraft.

76. The Sensor Operator is responsible for assisting the pilot by operating the camera attached to the aircraft and interpreting downlink data received from the UAS. They will also operate any payload attached to the aircraft.

77. Sensor Operators must have documented training from the vendor or supplier (or from someone already trained and approved by the Team Commander) for the equipment they are operating.

78. The SO is the custodian of evidence. In this capacity, the SO is responsible for the safeguarding and proper processing of any evidence including, but not limited to, digital imagery.

79. In the absence of a Mission Coordinator (MC) the SO will fulfill those assigned duties.

80. The Mission Coordinator is responsible for coordination of the mission, documentation, and liaison with other officers or agencies on the scene.

81. The MC will handle radio communications between ground units, the dispatcher, or other officers.

82. The MC shall remain alert for suspicious persons or activities on the ground near the launch/recovery area. They will also ensure the PIC is not being distracted or interrupted by persons on the scene.

83. The MC will serve as the Safety Officer for the flight ensuring all flight operations personnel understand applicable regulatory requirements, standards, and organizational safety policies and procedures. This does not preclude crew members from being alert for safety issues; everyone is a Safety Officer.

84. The MC will measure PIC and SO performance and compliance with organizational goals, objectives, and regulatory requirements as they impact flight safety.

85. Visual Observers should be licensed remote pilots so they are familiar with the rules of flight and limitations of the remote aircraft being operated. Anyone acting as a VO must be familiar with the following regulations.
    a. 14 CFR 91.111, Operating Near Other Aircraft;
    b. 14 CFR 91.113, Right-of-Way Rules;
    c. 14 CFR 91.155, Basic VFR Weather Minimums, cloud clearance, in-flight visibility;
    d. Glossary of terms including standard ATC phraseology and communication;
    e. The duties and responsibilities listed in this section.

86. The Visual Observer is responsible for assisting the pilot in scanning the airspace surrounding UAS operations. They will maintain visual awareness of the airspace and

advise the pilot of any imminent hazards including other aircraft, persons, obstructions, terrain, and adverse weather conditions. The VO will ensure the UAS is yielding to all manned aircraft.

87. The VO should have no other responsibilities so they may remain alert. They will maintain constant verbal communication with the PIC (may be by means of voice or radio). They may only serve as a VO for one aircraft at a time.

88. The VO will handle radio communications with air traffic control and other aircraft by means of an air band radio, and relay that information to the PIC. The VO will assist in airspace de-confliction by transmitting position reports on the local Common Traffic Advisory Frequency (CTAF), when possible.

89. A person not part of the UAS team may be temporarily appointed as a VO at the agreed upon discretion of the PIC and Mission Coordinator. This person must act under the direction of a Senior VO who is a member of the UAS team and meets all the qualifications of this policy. The Temporary VO will solely be responsible for maintaining line of sight coverage and collision avoidance in areas obscured to the Senior VO. Risk management and communication procedures will be discussed between the Senior VO and Temporary VO prior to the flight.

Operational Procedures

90. The minimum crew for any flight will consist of a Pilot-in-Command (PIC) and at least one other crewmember performing the duties of a Visual Observer. The recommended and preferred crew will consist of four members in order to fill all duties safely (PIC, SO, VO, MC). When exigent circumstances are present, a member of the team may fly their issued drone within their own visual line of sight until another team member arrives to assist as a visual observer.

91. The Crew must have with them a current copy of the team SOP, FAA Waivers, FAR AIM regulation manual, sectional chart, aircraft manual, aircraft maintenance log, aircraft registration, and aircraft preflight checklist. Each Pilot must also have with them their driver's license and FAA Remote Pilot License.

92. All Unmanned Aircraft will be operated in accordance with UAS Manufacturer's manual and recommendations, letters of agreement, waivers, Federal Aviation Regulations, and this standard operating procedure.

93. Whenever possible, only the pilot-in-command and the sensory operator will occupy the flight operations area. All other personnel will observe from a distance that discourages conversational communication with the PIC and SO. Staff other than the PIC and SO may view downlinked imagery via a remote viewing terminal (RVT) located away from the flight operations area.

94. Personal use of departmentally owned UAS aircraft and equipment is prohibited without permission of the Chief of Police.

Call Out Procedures

95. Requests for UAS Unit support for planned events should be submitted to the UAS Team Commander in advance of the event. When possible, planned flights should occur on UAS scheduled training days.

96. Requests for immediate support of any unplanned events shall be made to the UAS Team Commander either directly or through dispatch. If the UAS Team Commander cannot be reached, any member of the UAS Team will be contacted.

97. Once a request for UAS response has been approved, the Team Commander, or the member contacted in the Commander's absence, shall notify additional team members as needed. On-duty members should be contacted first, followed by off-duty members until an appropriate flight crew is available. Each pilot responding to an incident with a field-deployed UAS shall notify Dispatch and the responding or on-scene officers that the pilot is enroute with a drone. The pilot shall also notify Dispatch and on-scene officers when UAS operations have concluded and the pilot has cleared the incident. Coordination for equipment pickup and deployment shall be made by responding team members.

98. Any request, either planned or immediate, that would occur outside the City of Knoxville must be first approved by the Field Operations Bureau Commander or their designee.

99. Several requests for air support may be received simultaneously. Given the limited number of unmanned aircraft and personnel available, it is necessary to prioritize calls for service. In general terms, calls are prioritized as follows (listed in order of importance):
    a. Situations involving a potential threat to the safety of any person
    b. Search and rescue of innocent victims
    c. Searches for fleeing criminal suspects
    d. Surveillance of criminal activity or suspects
    e. Traffic control operations
    f. Requests to support other agencies
    g. Photo flights

100. When the KPD UAS team is operating in support of a KPD special team or unit, a liaison from that unit will work directly with the Mission Coordinator. When possible, this should be a member of the UAS team who is also assigned to the team or unit being supported.

101. All Crew Members will be equipped to communicate verbally, by cellular phone and by radio on a dedicated channel. Redundant communication will help to ensure safety. With that, the use of electronic devices for non-mission related communications shall be prohibited during any phase of flight operations by any member of the UAS crew. The PIC will never operate a communication device while in control of an aircraft.

102. All Crew Members will avoid unnecessary communications with the pilot during takeoff and landing.

103. In an effort to foster safe and effective operations, concern on the part of any crew member should be immediately expressed to the other member. If there is genuine concern on the part of any crew member, the mission should not be accepted or should be terminated.

104. The KPD UAS may be flown in conjunction with other aircraft from other agencies as long as the UAS team has had previous discussion and training with the members of the other aircraft and they maintain radio communications with the aircraft during flights. Current locations and altitude separations will be consistently communicated.

Pre-Flight Actions

105. Prior to any flight, regardless of the mission, the following tasks will be completed by the UAS crew:
    a. Self-assessment of crew's physical condition;
    b. Consideration for the relevance of the mission;
    c. Determination and compliances of the classification of the airspace in which the flight will be conducted;
    d. Completion of any required notifications to air traffic control or fixed based operations;
    e. Issuance of any required notice to airman (NOTAM);
    f. Check of current and forecasted weather;
    g. A Risk Assessment to address potential hazards and to impose mitigation techniques;
    h. Visual assessment of the flight operations area to identify hazards, such as man-made obstacles and terrain;
    i. Review of the aircraft flight log to ensure no maintenance issues remain unrepaired;
    j. A thorough pre-flight inspection of the UAS utilizing approved checklist;
    k. A pre-mission briefing to all UAS crewmembers;
    l. Establishment of Home Point at take-off while ensuring that point is acceptable for emergency landings;
    m. Adjustment of Return to Home altitude and low battery Return to Home level so both are set to the level appropriate for the terrain and mission;

n. Coordination with other aircraft involved in the mission;
o. Selection of a launch area clear of obstacles and unauthorized personnel.

106. Any issues or discrepancies found during Pre-Flight Actions will be discussed amongst the crew for the safest course of action to proceed. When in doubt, the mission will be postponed or cancelled until repairs can be made or conditions improve.

107. The final responsibility for Pre-Flight Activities and assurance of safe and approved flight rests with the Pilot in Command. Prior to flight, the PIC will familiarize themselves with all available information and intelligence relevant to the flight.

108. All flights will be documented in the aircraft logbook, pilot's log, UAS Mission Form (as needed), and KPD UAS Flight Log sheet.

109. The PIC is responsible for operation of UAS in the air and on the ground. They will ensure that no unauthorized items are attached to the aircraft prior to movement. During movement, adequate clearance will be maintained.

110. The PIC and VO must be constantly aware of dangers to ground personnel from the aircraft, rotors, and payload.

111. The PIC will not under any circumstances leave any unauthorized person in charge of the unmanned aircraft controls while the motors are running. If it is necessary for the PIC to leave the unmanned aircraft, the motors will be shut down and the controls deactivated or turned over to another authorized current licensed remote pilot.

112. Only mission essential personnel will be in proximity to UAS launch and recovery activities.

113. There will be no smoking allowed within 50 feet of aircraft, and a fire extinguisher must remain accessible to the crew at all times while an aircraft is unpacked.

114. When operating near populated areas, the PIC or MC will ensure that a "defined incident perimeter" exists, and all persons not directly related to the mission are inside structures or vehicles to limit the potential of persons being present beneath the UAS flight path.

115. Upon "Repack" of the aircraft, the PIC or their designee will ensure that all items are returned to their proper place in accordance with the team's inventory checklist. All items shall be properly stored so that all equipment is ready for the next mission.

116. Prior to initiating a flight, the UAS crew shall obtain a full weather briefing and conduct personal observations. These observations shall not only be from the reporting weather station, but on site of the flight. The crew will ensure they gather enough information to make themselves familiar with the weather situation existing throughout the area of operation.

117. Subsequent to the original weather briefing the crew may obtain sufficient weather information to ensure that the flight(s) may continue safely. The frequency of these additional weather checks will be determined by the speed at which weather conditions are changing. Rapidly changing conditions require more frequent weather updates.

118. The PIC is ultimately responsible for making the decision on whether safe and appropriate weather conditions exist for the flight to occur. Consideration must also be given to the anticipated flight time and time frame for approaching weather.

119. Weather minimums for UAS Operations include:
    a. No precipitation of any type or quality;
    b. Clearance from clouds in accordance with FAA requirement for UAS flights, to include the ability to conduct the flight at least 500' beneath any cloud ceiling and at least 2000 feet horizontally from clouds;
    c. Visibility of at least 3 statute miles (measured from the UAS control station);
    d. No operations will be conducted when the ceiling is less than 1,000 feet AGL.

120. Maximum wind limitations shall be established pursuant to the UAS manufacturer's recommendations. In addition to system recommendations, consideration should be given to the individual pilot's level of experience.

121. Weather minimums are not applicable to indoor operations.

122. The maximum altitude for flight (AGL, above ground level) in accordance with Part 107 operation FAA regulations is 400 feet. Flight may be higher than 400 feet AGL as long as the aircraft is within 400 feet of a structure.

123. Minimum standoff distances from people and objects shall be determined with the PIC before the flight. This decision will take into consideration the capabilities of the UAS being operated, the nature of the mission, current conditions, visibility and light level, and experience of the pilot. Under no circumstances should safety be compromised to get closer to an object.

124. The aircraft will be operated within visual line of sight (VLOS) of the PIC or a VO at all times, using only human vision unaided by any device other than corrective lenses, unless an active FAA Waiver is in place.

125. Flights must be in compliance with FAA regulations for UAS operation and altitude limits. This includes airspace and proximity to airports. If the flight is being performed within controlled airspace, or near any airport or aircraft operating site, notification (by air radio or telephone) of the intended operation will be provided prior to take-off.

126. Night time flights shall be in compliance with FAA regulations.

127. Safety measures that will be followed for night flights will include:

a. Use of marker/anti-collision lights on the aircraft that can be seen 360 degrees around the aircraft;
b. Maintenance of a constant comparison between the aircraft's actual location and where that point is on a daytime satellite image of the area. This can be done by use of the moving map on the UAS app and comparing it to a Google Map image.
c. Review of possible visual illusions caused by darkness while understanding physiological conditions may degrade night vision prior to night flight.
d. If night vision goggles are utilized by the Visual Observer, a second Visual Observer will be used also with unaided vision. The second VO is to eliminate the sole reliance on the NVG. Anyone using NVG must have received documented training from the KPD Special Operations Squad to include use, limitations, inspection, and care of the unit. Any crew member using NVG must complete this training annually.

128. Batteries shall be recharged in accordance with the manufacturers' recommendations. Lithium-Ion batteries shall not remain in a powered charger unattended. All crew members must remain conscious of the fire hazard associated with UAS batteries and take proper precautions to mitigate damage and danger should a fire occur, including keeping a fire extinguisher accessible at all times.

129. Care must be taken for batteries to keep them from extreme hot and cold temperatures. Extreme temperatures can affect battery life cycle, efficiency, charging rate, and overall safety.

130. UAS operators are prohibited from beginning a flight unless there is enough available power for the UAS to conduct the intended operation.

131. Pilots and Sensor Operators will actively monitor the battery status to ensure safe levels of operation. At no time will the aircraft be operated at a distance where it cannot, under its own power, return to the origination point.

132. A fire extinguisher, appropriate for the types of hazards encountered (batteries, plastics, combustible material encountered on the ground), will be readily available at all times.

133. During any duty period the total flight time of any PIC or VO may not exceed 6 hours. While limitations and rest should apply to all UAS crew members, it will be mandatory for PIC and VOs. These rest requirements do not prohibit a crew member from being called back to work after a normal shift as long as total duty time (flight and normal) does not exceed 16 hours in a 24-hour period.

134. A crewmember shall have the self-discipline to terminate or decline a mission if, in the member's determination, they would be unsafe to perform the flight due to fatigue or other factors.

Post-Flight Actions

135. At the conclusion of flight operations, necessary notifications will be made to air traffic control, fixed base operations, etc. that the flight has concluded.

136. Digital media evidence will be downloaded and transferred in accordance with the digital media evidence policies.

137. A thorough inspection will be conducted of the UAS immediately after the completion of the mission to ascertain if any damage was sustained during operation. If necessary, the aircraft will be serviced so that it is immediately available for the next flight.

138. All UAS flights shall be documented on the KPD UAS Flight Log and tracked electronically through the applicable aircraft or flight-management software. Any UAS mission requiring a KPD UAS Mission Form shall be documented accordingly. Necessary entries shall be made in the aircraft flight log, crew member logs, mission forms, and other applicable reports. At the conclusion of each call or flight operation, the pilot responsible for the flight shall complete the required log and publish the flight to the Transparency Portal. If extenuating circumstances prevent completion at the conclusion of the call or operation, the pilot shall complete the log and publication before the end of the pilot's shift. Any exception extending beyond the end of the shift must be approved by the RTIC Supervisor or RTIC Commander.

139. All Department UAS flights shall be published to the Transparency Portal. Publication may be delayed only for flights involving an ongoing organized crime investigation, undercover operation, or tactical operation when immediate publication could reasonably compromise the integrity or safety of the investigation or operation. Any delayed flight shall be published no later than 30 calendar days after the flight or upon apprehension of the suspect associated with the operation, whichever occurs first.

140. After Action Debriefings will occur with the UAS team for all missions to discuss and critique tactics used and their effectiveness and outcomes. Additional debriefings may occur with other teams or agencies as needed.

141. Batteries will be placed on charge and all equipment readied to ensure their operability for future flights.

Digital Media Evidence (DME)

142. Pilots shall record and maintain camera media for the entirety of their flight from launch to landing unless disabling recording is required by other policy or law. If a pilot disables recording during a flight, the pilot shall document the reason(s) for disabling recording as soon as practicable. When consistent with safe operation, pilots should orient the main camera during transit in a direction that minimizes observation of areas unrelated to the authorized mission.

143. Recording promotes pilot and officer accountability and transparency, preserves inculpatory and exculpatory evidence, and/or improves the investigation of aircraft safety incidents that may occur. A complete recording allows for post-flight determination of pilot adherence to policy, prevents loss of public trust from a partial or incomplete recording of a controversial incident, and allows the drone to serve as an impartial witness in criminal prosecutions.

144. In order to safeguard the privacy of the citizens, collection of data to include, but not limited to, digital photographs, digital video, and infrared images, will be limited to the extent absolutely necessary to accomplish the current mission. All data collected will be relevant and in accordance with TN Code Annotated 39-13-609 Freedom from Unwarranted Surveillance Act and the 4th Amendment of the U.S. Constitution.

145. At the conclusion of a mission flight, all DME will be copied from the aircraft SD card to a data storage device, marked as 'Original Full Content,' and logged in to confiscations. A copy will also be made for the requesting officer. The DME will then be copied to an external hard drive that remains with the Team Commander. The SD card will then be deleted for use in future flights. DME obtained from training flights will be downloaded to an electronic storage device (USB drive or external hard drive) for training use.

146. Per TCA, only data that has evidentiary value will be retained. All data will be safeguarded to protect the privacy of citizens who may be depicted in the data. All other data that is not of evidentiary value will be destroyed through electronic deletion within 15 business days of conclusion of the flight. Digital logs of aircraft mission profiles are exempt from this requirement. Storage of data will be in accordance with current policies utilized by the KPD Forensics Unit SOP for the storage of DME (photos and video).

147. If the media is potential evidence in a criminal investigation, an Office of Professional Standards investigation, a or public complaint, the retention period for the media will match the retention period of the investigatory case file.

148. If the media relates to an investigation into airworthiness or diagnostics of a UAS, the media may be retained until no longer needed for the investigation or diagnostics.

149. Department rules restricting access to BWC footage during investigations will apply to UAS media that depicts the same incident for which the investigation is being conducted.

150. Personnel shall not edit, alter, erase, duplicate, copy, share, or otherwise distribute in any manner UAS DME without prior authorization from the UAS Team Commander and the officer who originally requested the imagery be obtained. All downloads, alterations, copies, and deletions will be logged on Mission Form.

151. The release of any stored DME will be in accordance with departmental policy.

Documentation

152. In an effort to keep the department, its command staff, and the community informed of the utilization and effectiveness of the UAS program, an Annual Report will be submitted by the UAS Team Commander. The team's annual report will be included in the department's Annual Report which is made available to the public. This report will summarize training, operations, and significant issues related to the team for the year. Quarterly inventory and equipment reports will be submitted to the Operations Support Captain, or designee, and the Accreditation Unit.

Safety

153. The safety of the public, first responders, and UAS Team Members is the highest priority. The team is committed to providing safe working conditions with the objective of having an accident-free work environment. An open reporting culture without disciplinary action against persons reporting safety hazards and concerns will be in place. Whether training or operational, any member of the team can cancel and ground a mission for perceived safety concerns until the concern can be discussed, clarified, and mitigated. No one (regardless of rank or position) may order a pilot to fly an aircraft when, in the opinion of the pilot, it cannot be done safely.

154. While the role of Safety Officer generally falls within the duties of the Mission Coordinator, it is the duty of every UAS team member to understand their role and remain vigilant to factors and conditions that pose a safety concern. All members are responsible for identifying, reporting, and mitigating hazards. If any member observes, or has knowledge of, an unsafe or dangerous act committed by another member the Team Commander is to be notified immediately so that corrective action may be taken.

155. Safety Management contributions may come in many forms and includes always operating in the safest manner practicable, never taking unnecessary risks, recognizing that safe does not mean risk free, and holding team members accountable. Any safety hazard, whether procedural, operational, or maintenance related should be identified and corrected as soon as possible. Any suggestions in the interest of safety should be made to the rest of the team without reservation.

156. UAS Team Members will receive documented safety training by way of Private Pilot Ground School, aircraft manufacturer guidelines, and other pertinent material from the unmanned flight community brought to the attention of any team member.

157. All UAS Team flight crew personnel will adhere to the following safety principles:
    a. Conduct a map or photo review to identify any potential hazards.
    b. Ensure that sound flight principles and procedures are followed for all operations regardless of mission urgency.
    c. Recommend risk reduction procedures to enhance aviation unit safety.

d. Refrain from electronic messaging or texting during flight operations (for the PIC or VO).
e. Report hazards and unsafe conditions or acts to the mission coordinator.
f. Make on-the-spot corrections of unsafe conditions.

158. Any member of the UAS team that comes in contact with safety related information will share it with all personnel by way of electronic email for quickest dissemination. The information will then be discussed at the next training session with hard copies provided to all members and to each aircraft book.

159. Safety training will include risk control measures, the safety management system as it relates to individual responsibilities, and general hazards associated with UAS operations.

160. By their very nature, public safety UAS operations involve some element of risk. Risk Assessment and Mitigation is a formal process that ensures analysis, assessment, and control of the safety risks in operations. It also determines and analyzes the risk factors related to the severity and likelihood of potential events associated with known hazards and identifies appropriate risk mitigation strategies.

161. At a minimum the risk assessment process shall:
    a. Use a collective and comprehensive strategy that considers the severity and probability of a hazard;
    b. Identify, assess, and calculate an overall level of risk associated with the hazard;
    c. Determine when to elevate the decision for risk acceptance to a higher level;
    d. Analyze the risk and develop mitigation measures;
    e. Develop a means to track corrective actions and their effectiveness.

162. A safety “stand down” will be conducted annually. During a stand down all members with unmanned aviation responsibilities assemble to review the Team’s safety program. It is also an opportunity to identify potential hazards, update emergency notification forms, conduct safety training, etc. During the safety stand down meeting, normal operations are suspended to assure that all members are focused on the safety of the program.

163. As part of the Safety Stand Down, the UAS team commander will evaluate operational data to ensure the effectiveness of safety risk controls and assess system performance.

164. A review of this SOP will take place during the annual safety “stand down” meeting.

Medical Condition of Team Members

165. Each member shall report to work rested and emotionally prepared for the task at hand.

166. 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. Unit members are expected to ground themselves when these problems could reasonably be expected to affect their ability to perform flight duties.

167. A self-assessment of physical condition shall be made by all flight crew members during preflight activities.

168. No member shall act as an air crew member within eight hours after consumption of any alcoholic beverage (FAR 91.17).

169. Should a member of the crew develop fatigue or a sudden illness, the flight will be terminated as soon as practical until a replacement crew member can be placed into the mission.

170. 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 the airspace. Secondary concerns include protection of property in the air and on the ground.

171. Following a UAS accident involving death or serious injury to any person; any loss of consciousness; damage to any property other than the unmanned aircraft where the cost of repair (including materials and labor) exceeds $500; or in the event the total loss of the fair market value of the property destroyed exceeds $500, the aircrew shall do the following:
    a. Immediately notify dispatch and request needed assistance;
    b. Render first aid to the injured;
    c. Secure the scene and ensure the aircraft and its contents are moved only to the extent necessary to remove injured persons, protect the public from injury, and/or protect the wreckage from further damage;
    d. Make notification to the Team Commander, or designee, who will respond to the scene and coordinate accident investigation efforts. They will also make KPD Command Staff Notifications.
    e. Notify the FAA (and NTSB if instructed to do so by FAA);
    f. Survey and document the damage to the aircraft and/or other property with aid of KPD Forensics Unit;
    g. Identify witnesses to the incident and document their statements and contact information;
    h. Provide any additional assistance or information requested by the FAA and NTSB.
    i. Complete a City of Knoxville Incident Report.

172. The FAA must also be notified within 24 hours of any flight that results in an unsafe/abnormal operation:

a. Total loss of UAS (unrecovered fly-away);
b. A malfunction or failure of the UAS on-board flight control system;
c. A malfunction or failure of ground control station flight control hardware or software (other than loss of control link);
d. A power plant failure or malfunction;
e. An in-flight fire;
f. An aircraft collision involving other aircraft;
g. A deviation from an ATC clearance and/or Letter(s) of Agreement/Procedures.

Training

173. Any person who will operate a KPD UAS or serve as a member of the flight crew shall receive initial and refresher training to maintain flight currency. Such training will be documented and includes instruction in the following areas:
    a. Fundamentals of aviation
    b. Applicable Federal Aviation Regulations (FAR's)
    c. Public Aircraft Operations
    d. Safety Management Systems (SMS)
    e. Community concerns regarding the use of UAS by government agencies, state and local laws pertaining to UAS operations, and liability and legal issues.

174. Training objectives will vary depending on whether the member is new to unmanned aviation or an experienced member. Objectives should challenge the member to increase their competency in the knowledge and skills necessary to perform safe UAS operations.

175. Any member who fails to successfully complete or maintain proficient training may be subject to removal from the team.

176. In addition to the certification requirements of the Federal Aviation Regulations, before a pilot may act as a Remote Pilot in Command they shall receive documented training and demonstrate proficiency in the following areas:
    a. Program policies and procedures
    b. Requirements of the program's FAA Certificate of Authorization, and/or Part 107 waiver(s)
    c. Weather considerations
    d. Orientation to airspace, airports, heliports, heli-spots or any approved landing zones in the local operating area
    e. Safe operation of the aircraft throughout all phases of flight
    f. Specialized equipment operations and use (FLIR, night vision, etc.)

177. In-house training will be conducted in addition to external training to ensure the most up-to-date and diverse training.

178. Any crewmember acting as a sensor operator will receive at a minimum the following training and demonstrate proficiency before acting in the capacity:
    a. Aircraft and sensor preflight procedures and checklist
    b. Aircraft launch and recovery procedures
    c. Battery use and change procedures
    d. Sterile cockpit procedures
    e. Program policies and procedures
    f. Digital Media Evidence (DME) chain of custody policy
    g. Crew resource management (CRM)
    h. Fire safety and response
    i. Emergency procedures
    j. Legal and regulatory issues

179. Any crewmember acting as a visual observer will be sufficiently briefed prior to flight with emphasis on:
    a. Maintaining effective communication with the RPIC;
    b. Clear definition of launch and recovery location;
    c. Scanning airspace for potential collision hazards and maintain awareness of the position of the aircraft through direct visual observation.

180. While it is strongly preferred that VOs be members of the UAS team, they may be selected by an RPIC to perform those duties during a specific mission if staffing, time, or the operation require more personnel than the team has present. It is critical that the VO be briefed as to their role in the operation and an assessment be made by the RPIC as to their capability to perform this role.

181. At scheduled monthly UAS Team training, recurrent training for all pilots and sensor system operators/visual observers will be conducted. The UAS Team Commander or their designee is responsible for organizing these training sessions. Examples of training may include safety, respect for the law and citizens' privacy, crew resource management, "lessons learned" in previous deployments, currency and skill building flight, and maintenance.

182. The UAS Team Commander, along with the team's Chief Pilot, will continuously evaluate the practical skills of pilots in the performance of missions and trainings. This evaluation will be conducted annually by way of a recurrent flight with the results documented. These performance standards will be relevant to the duties of the pilot, the unit's mission statement, the scope of service, and will include the following:
    a. The safe operation of the aircraft throughout all phases of flight to include: proper and effective use of aircraft checklists; effective crew coordination; proficiency of tasks associated with the missions performed by the unit (scenario-based training); safe and effective mission planning; program policies

and procedures; legal and regulatory mandates; operation of aircraft in accordance with the applicable OEM manual.

b. Hazard identification & risk management including judgment and decision making, human factors, stress management in all phases of flight, interpersonal communications between crewmembers, workload management, distractions, emergency procedures, aircraft limitations, and situational awareness.
c. Execution of proper emergency procedures appropriate to a give situation.

183. Recurrent training is not limited to actual pilot skills but also includes knowledge of all pertinent unmanned aircraft system matters.

184. Failure to demonstrate proficiency may result in removal from the Unmanned Aircraft Systems Team.

185. Training records will be maintained for all UAS Team members. Records can be kept in written or electronic form and will include the following information at a minimum:
    a. Name, pilot certificate number and a listing of all ratings;
    b. Documentation showing the date of successful completion of initial and recurrent training for all personnel required to receive such training, including copies of certificates of training or other proofs of compliance;
    c. For pilot proficiency, the documentation or checklist used to record pilot proficiency check flights. For non-pilot crew, evaluations and certifications, where applicable;
    d. Documentation related to any training failures or inability to successfully complete any required training, including check flights, and what remedial action was taken to satisfactorily complete the required training;
    e. The make, model and type of aircraft or flight training equipment used to conduct the training.
    f. The UAS team will retain these records and copies of all pilot proficiency check flights, crewmember evaluations, and certifications for a minimum of five years after the individual leaves the UAS program.

UAS Maintenance

186. Properly maintained UAS are essential to safe operations. Compliance with manufacturer's scheduled maintenance, preflight inspections, and immediate repair of mechanical problems ensure the availability and safety of unmanned aircraft.

187. The KPD UAS Team will maintain their systems in compliance with requirements of the Federal Aviation Administration and Original Equipment Manufacturer maintenance requirements or recommendations. In addition to maintenance regulations and OEM requirements, the team will establish a maintenance program for the UAS being operated. This includes preflight checklists.

188. The airworthiness of UAS must be assured and is dependent upon scheduled maintenance, thorough inspections and timely correction of discrepancies. It is incumbent on crewmembers to ensure their system(s) are airworthy at all times.

189. All maintenance completed (both software and hardware) is documented in the aircraft logs. This information will include at a minimum date, work performed, by whom, and operational flight check results. This will include deferred and outsourced maintenance.

190. All UAS will have a written checklist that outlines the specific actions to be performed during pre-flight inspections to determine that the system is airworthy and ready for flight. Completion of these checklists are required prior to all flights for a mission. Reevaluation of the checklist is not necessary between landings for battery changes unless a member of the crew determines it is appropriate.

191. The Discrepancy Reporting System shall be followed if problems are noted.

192. The Aircraft Flight Log will be reviewed prior to flight and the appropriate data entered at the end of each flight.

193. Any maintenance or modifications performed to aircraft beyond that prescribed by preflight checklists, cleaning, or battery maintenance (to include software updates, parts replacement, modifications, etc.) will be approved by the Team Commander.

194. The Team Commander will approve the person performing the work, ensuring that person has the training or qualifications to perform the work being completed safely and in accordance with best practice and manufacture guidelines. This maintenance will be documented in the aircraft's log.

195. Following any maintenance, an operational test flight check will be performed by a licensed Pilot designated by the Team Commander to validate the maintenance that was performed and ensure that the results of the test flight are documented in the appropriate maintenance records.

196. This test flight will include at a minimum the following checks:
    a. Preflight inspection
    b. Start-up procedures
    c. Electronics systems check
    d. Low altitude hover check
    e. Flight control function check
    f. Altitude control function check
    g. Perform one full flight
    h. Shutdown procedures
    i. Post-flight inspection

197. In the event outsourced UAS maintenance is required, the team commander and Chief Pilot will agree on the person completing the work, ensure they comply with this policy, and provide oversight of the maintenance contractor and the work performed. The documentation of the work performed will be added to the aircraft's log.

198. Any maintenance needs noted by a crew member will be documented in the aircraft's log.

199. The member discovering the issue will immediately notify the Team Commander and all team members.

200. In addition to that notification, tape will be placed over the battery hull of the aircraft signifying it is out of service until repairs can be made. A full-size piece of paper noting 'Out of Service' and the issue will be placed in the top of the aircraft storage container. Once repairs have been made by an authorized person, and the aircraft returned to service, a notification will go out to all team members.

201. Software, hardware, and firmware updates will be documented via discrepancy reporting system as well.

202. Inspection and maintenance of specialized equipment is critical to safe and effective operations. This equipment includes payloads, camera, FLIR/night vision, communications, tablets, and computers.

203. These items will be inspected prior to use and any maintenance or repairs will only be performed by certified parties. Records of any repairs will be documented in a separate Specialized Mission Equipment log.

204. Storage of UAS (to include aircraft, batteries, controllers, etc.) will be in a location that affords security and protection from the elements (extreme heat/cold, moisture, dust). All members of the UAS Team will have access to the equipment at all times.

UAS System and Equipment Requirements

205. Aircraft and equipment being considered for acquisition by the KPD UAS Team will be evaluated through demonstration and performance testing to determine its airworthiness in adverse conditions, capabilities, ability to perform agency missions, manufacture support, data link capabilities and security.

206. Aircraft will be from a reputable manufacturer and preferred from the commercial grade category. Other considerations should include standardized operational checklists, ability to verify the connectivity/control link, ability to monitor the battery levels, ability to monitor the altitude of the UAV at the GCS, tamper-proof flight time recorder, viewable flight telemetry, ability of the UAV to autonomously execute a specific protocol in the event of loss of the command, and anti- collision lighting system.

207. All aircraft utilized by the KPD UAS Team will be properly registered with the FAA for commercial use with its assigned registration number affixed to the aircraft. A printed copy of the registration will be maintained with the aircraft at all time.

Auditing Procedures

208. The Department shall develop policies and procedures for regular auditing of the program to ensure that aircraft are launched only for authorized uses, that pilots adhere to policy or program requirements to include timely record keeping for transparency and accountability, and that data is shared or accessed only in compliance with this policy.

209. At least once per year, the Department will conduct a review of the previous year's DFR use that summarizes DFR use by the Department, any violations of policy and the corrective action prescribed, and any FAA-reportable air safety incidents.

210. Audits of UAS use will include ensuring that operators have logged their UAS use at the end of the shift and ensuring that all flights are published on the Transparency Portal and in accordance with this policy.