Manteca Police Department

Unmanned Aircraft System

(UAS) Operations Manual

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Preface

The purpose of this operations manual is to provide members of Manteca Police Department a set of operational procedures intended to promote the safe, efficient, and lawful operation of an Unmanned Aircraft System. All operations conducted by the Manteca Police Department will be in strict compliance with procedures set forth in the Federal Aviation Administration (FAA) Certificate of Waiver or Authorization (COA) or within guidelines set forth in Title 14 CFR, Part 107. In the event of a discrepancy between this manual and FAA rules, FAA rules shall govern.

Table of Contents

I. Definitions and Abbreviations

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

Air Traffic Control (ATC): Manages traffic from the airport to a radius of 3 to 30 miles. Provide pilots taxiing and take off instructions, air traffic clearance, and advice based on their own observations and experience. Maintains separation between landing and departing aircraft, transfers control of aircraft to the en-route center controllers when the aircraft leave their airspace, and receives control of aircraft on flights coming into their airspace.

Certificate of Waiver or Authorization (COA): Authorization issued by the FAA defining specific boundaries and parameters for Manteca Police Department UAS operations.

Federal Aviation Administration (FAA): Federal agency in the United States and part of the Department of Transportation. The FAA regulates U.S. civil aviation, U.S. commercial space transportation, operates control towers, builds, installs, and maintains electronic aids to navigation, and registers all pilots and aircrafts in the United States.

Incident Commander (IC): The IC is responsible for directing and/or controlling resources by virtue of explicit legal, agency, or delegated authority. The IC develops incident objectives and manages all incident operations. The IC sets priorities and defines the ICS organization for the particular response.

Instrument Flight Rules (IFR): Under IFR, ATC exercises positive control (i.e., separation of all air traffic within designated airspace) over all aircraft in controlled airspace, and is primarily responsible for aircraft separation. Aircraft operating under IFR must meet minimum equipment requirements. Pilots must also be specially certified and meet proficiency requirements. IFR aircraft fly assigned routes and altitudes, and use a combination of radio navigation aids and vectors from ATC to navigate.

National Airspace System (NAS): The NAS is made up of a network of air navigation facilities, ATC facilities, airports, technology, and appropriate rules and regulations that are needed to operate the system.

Navigable Airspace: FAA controlled airspace classified as: A, B, C, D, E, and G.

Nighttime: Title 14 Code of Federal Regulations (14 CFR) part 1: “Night means the time between the end of evening civil twilight and the beginning of morning civil twilight, as published in the American Air Almanac, converted to local time.”

Notice to Airmen (NOTAM): A NOTAM is time critical information concerning the establishment, condition, or change in any component in the National Air Space (NAS). The NOTAM provides knowledge that is essential to personnel concerned with flight operations in designated areas. NOTAMs may be filed as a temporary change to the NAS as they were not known in advance to publish on aeronautical charts or other operational publications

Pilot: Any member who has been accepted into the UAS program and authorized by the Program Manager to operate a UAV.

Pilot-in-Command (PIC): Person who has final authority and responsibility for the operation and safety of flight, has been designated as the PIC before or during the flight, and holds the appropriate category, class and type rating, if applicable, for the conduct of the flight. The PIC is solely responsible for the input of commands/piloting during flight operations. Pilots are authorized to evaluate and accept or decline any mission or portion thereof due to safety concerns.

Unmanned Aircraft Vehicle (UAV): A powered, aerial vehicle that uses aerodynamic forces to provide vehicle lift, can fly autonomously or be piloted remotely, and can be expendable or recoverable.

Unmanned Aircraft System (UAS): Consists of an unmanned aircraft weighing less than 55 lbs., the command system, a secure control link, camera, and other related safety support equipment, including ground control base stations and specialty vehicles designed to support unmanned flight operations.

Unmanned Aircraft System Crew Member: A Pilot in Command, Visual Observer, or other persons assigned UAS duties for flight.

Visual Line of Sight (VLOS): Visual contact between PIC or VO and a UAS sufficient to maintain safe operational control of the aircraft, known location, and be able to scan the airspace in which it is operating to see and avoid other aircraft or objects aloft or on the ground.

Visual Observer (VO): The Visual Observer is equally responsible for the visual observation of the UAS while in-flight. The VO shall alert the PIC of any conditions (obstructions, terrain, structures, air traffic, weather, etc.) that may affect the safety of flight. The VO is responsible for all on scene radio communications between the IC or designee and the PIC, in addition to all aviation related communications required by the FAA.

Personnel

A. UAS Operator (Pilot)

(1) UAS pilots must be able to demonstrate knowledge, experience and skill set necessary for safe operation of the UAS. All UAS pilots are authorized to train with the unit, as directed by a UAS supervisor. UAS pilots are only authorized to conduct general patrol missions after completing training and certification consistent with the FAA Certificate of Waiver or Authorization (COA), or Title 14 CFR, Part 107.

The UAS Supervisor is the lead pilot of the UAS unit. The UAS Supervisor is responsible for developing and maintaining training consistent with current law, policy, FAA regulations and best safety practices.

(2) Endorsements

(a) Pilots who demonstrate the knowledge and skills necessary to safely conduct missions under any of the following conditions may be authorized to do so by the Program Manager:
   (i) Nighttime operations
   (ii) Indoor operations

(3) Operators

(a) Generally, UAS Operators should be used for field deployments however; UAS Supervisors who are authorized pilots may also be deployed. In the event an Operator is unavailable a UAS Supervisor can conduct any mission authorized under the COA or Part 107.

B. Pilot in Command (PIC)

The PIC is the sole person responsible for the safety and operation of the UAS during a mission or training. Every flight will have one designated PIC. Pilot in Command responsibilities include but are not limited to:

(1) Have an understanding of, and comply with, FAA regulations applicable to the airspace where the UAS will operate
(2) Have an understanding of, and comply with, the manufacture's user manual
(3) Maintain proficiency on each of the airframes in the UAS program, as authorized

C. Visual Observer

The Visual Observer is crucial in ensuring the UAS operates in a safe manner. The Visual Observer is responsible for communicating with the PIC, the Incident Commander and any manned aircraft (if applicable.)

D. UAS Officer in Charge (Supervisor)

UAS Supervisors will be responsible for ensuring operations are being conducted within policy and FAA guidelines. Supervisors will review all UAV Deployment Report Forms to ensure compliance. The OIC will also work with the Master Pilot to plan and conduct training and scenarios to maintain a high level of pilot proficiency and ensure safety.

The OIC will be responsible for obtaining and maintaining FAA Certificate(s) of Waiver or Authorization (COAs).

E. UAS Program Manager (Coordinator)

UAS Program Manager will be responsible for ensuring that policies and procedures conform to current laws, regulations and best practices and will ensure all operators maintain their Part 107 – Remote Pilot Airman Certificate

II. Safety

A. Preface

The Manteca Police Department is committed to conducting all UAS operations in a safe manner. Safety shall be the primary concern on every operation, regardless of its nature.

B. Safety Policy

(1) It is the duty of every member within the UAS program to contribute to the goal of safe operations. This contribution may come in many forms and includes always operating in the safest manner practicable and never taking unnecessary risks. Any safety hazard, whether procedural, operational, or maintenance related should be identified as soon as possible. Any suggestions in the interest of safety should be made through the UAS program chain of command.

(2) If any member observes or has knowledge of an unsafe or dangerous act committed by another member, the UAS Coordinator is to be notified immediately through the UAS program chain of command.

(3) All members of the UAS program are safety officers and are responsible for the following:

(a) Ensure all flight personnel understand applicable regulatory requirements, standards, and organizational safety policies and procedures

(b) Observe and control safety systems by monitoring all operations

(c) Review standards and practices of departmental personnel as they impact operational safety

(d) Communicate all reported safety related problems and the corrective action(s) taken. If there were any in-flight problems, lessons learned, and the proper procedures for handling the problem should be shared and discussed

C. Medical Factors

The health of the flight crew is paramount and any member of the UAS program can stand down if they feel they are not able to perform their duties to the highest level. A self-assessment of physical condition shall be made by all flight crew members during pre-flight activities.

D. Emergency Procedures

(1) The Incident Commander or on-duty Watch Commander shall be notified of any incident resulting in injury or property damage, as soon as possible.
   (a) The PIC will complete and submit a UAV Deployment Form detailing the incident prior to securing from duty.
   (b) The PIC will send an email to the UAS supervisor advising an injury incident occurred and a UAV Deployment Form regarding the incident has been filed.

(2) Any incident which does not result in injury will be documented on the UAV Deployment Form.

E. Reporting of Incidents Causing Injury or Damage

1) Any incident involving a UAS which results in injury to any person or damage to any property will be reported as soon as practical to his/her Field Supervisor and to a UAS Supervisor.
2) UAS equipment that is damaged shall be noted on the UAS deployment report.

III. Training

A. General

1) A combination of classroom and scenario based training will be conducted to ensure pilots are proficient and operating using all applicable safety protocols.
2) Training will be conducted at least quarterly, more frequently if staffing allows
3) UAS personnel are required to attend all scheduled training.
   a) Any absences must be approved by the UAS Program Manager or Supervisor
   b) Excessive absences from training can result in a pilot being removed from the UAS team
4) All Pilots and Visual Observers must receive training in recognizing and overcoming visual illusions caused by darkness and understanding physiological conditions which may degrade night vision prior to being endorsed for or involved in night-time operations.

IV. Operational Procedures

A. General Rules

1. The Remote pilot in Command (RPIC) is ultimately responsible for the UAS operation and has the final decision to accept or reject a mission based on factors such as weather, safety concerns or other conditions which would result in an unsafe operation.

2. No member of the Manteca Police Department (or other entity), regardless of rank, may
   a) Accept a mission
   b) Fly outside of FAA, COA or manufacturer's specified parameters
   c) Violate any rules or regulations that the PIC determines would put First Responders, members of the public or the UAS team at greater risk than ordinarily assumed with flight operations.

B. Deployment Rules

1) Authorized Use: UAS deployment should be considered for directed enforcement deployments on specific incidents when an aerial view would assist officers or incident commanders. Some examples of such incidents may include:
   a) Perimeter/Block Searches
   b) Missing Persons Investigations
   c) Search and Rescue operations
   d) Fatality Collision Investigations
   e) Fires
   f) Disaster Management
   g) Crime Scenes
   h) Crowd Control situations
   i) Search Warrants
   j) S.W.A.T. Operations
   k) Explosive Ordnance Disposal
   l) Barricaded Suspect(s)
   m) Supporting Criminal Investigations
   n) Routine Training
   o) Community Engagement Presentations (when authorized by the Watch Commander or UAS Program Manager or Supervisor)

2) Prohibited Use: The UAS equipment shall not be used:
   a) To conduct random surveillance activities
   b) To harass, intimidate, or discriminate against any individual or group
   c) To conduct personal business of any type
3) Flight over water
   a) Flights over water should generally be avoided, if possible
   b) The PIC should use sound judgement when deciding to fly over water. Some considerations are:
      i) Type of mission
      ii) Current and forecasted weather
      iii) Duration of time over water
      iv) Battery status
4) Flight over freeways
   a) Flying UAVs over freeways is highly hazardous and should be avoided if possible. Only under extremely exigent circumstances should it be considered. If the decision to fly over a freeway is made, pilots should minimize the amount of time the UAV is over the freeway. Under no circumstances should a UAV hover over a freeway that is open to vehicular traffic.

C. Allied Agency Requests/Mutual Aid Requests

1) Allied Agency and Mutual Aid requests must be approved by the on-duty Watch Commander or the UAS Program Manager

D. Deployment Procedures

*****Flight operations <u>shall not commence</u> until all items are checked and/or mitigated*****

1) Pre-flight
   a) Conduct pre-flight checklist
   b) Location: Use the AIRMAP app to determine if your location is within controlled airspace or near an airport. Make notifications, if required or obtain airspace authorization by means of LAANC.
      i) Airspace restrictions known/discussed
      ii) Primary and Secondary landing/safety zones known/identified
   c) Mission Parameters
      i) Qualified PIC at controls
      ii) All persons briefed and assignments known/discussed
      iii) Direct communication with Incident Commander and Visual Observer
      iv) Direct communication with local airspace controllers/aircraft, if needed
   d) Determine if flight will be pursuant to COA or Part 107
      i) If flight is conducted under COA, but within restricted operational areas, determine if an emergency waiver is necessary
         (1) Contact FAA to seek an emergency waiver
         (2) Notify airport control tower of the emergency waiver
   e) Weather
      i) Current and future weather conditions known/discussed
   f) Advise airport control tower, if applicable

2) Post-flight
   a) Complete post-flight checklist
   b) Complete required documentation
      i) Manteca Police Department UAV Deployment Report Form
      ii) Supplemental crime report, if needed
   c) Upload videos/photographs from SD card to Evidence.com
   d) Sync flight logs with DJI server
   e) Upload flight logs into safetydrone.org website

V. Appendix

A. Phantom 4 /Matrice 210 Flight Safety Checklist

FLIGHT SAFETY CHECKLIST (PHANTOM)

PREP – BEFORE YOU FLY

- ☐ BATTERY STATUS
  - CONTROLLER / AIRCRAFT / DISPLAY
- ☐ CHECK "B4UFLY" APP
- ☐ CHECK WINDSPEED / WEATHER
- ☐ VISUALLY INSPECT OPERATION AREA
- ☐ COMPLETE RISK ASSESSMENT
- ☐ ADVISE AIRPORT TOWER
  (IF FLIGHT WILL BE IN CONTROLLED AIRSPACE)

PRE-FLIGHT – AIRCRAFT

- ☐ VISUALLY INSPECT AIRCRAFT
- ☐ ATTACH PROPS & CHECK FOR DAMAGE
- ☐ INSTALL CHARGED BATTERY
- ☐ CONFIRM SD CARD INSTALLED
- ☐ VISUALLY INSPECT CAMERA / LENS
- ☐ REMOVE GIMBLE LOCK

PRE-FLIGHT – CONTROLLER

- ☐ POWER ON CONTROLLER
- ☐ WATCH FOR FIRMWARE UPDATES
- ☐ SET DISPLAY BRIGHTNESS & VOLUME
- ☐ CLOSE ALL BUT PILOT APP ON DISPLAY

PREP – BEFORE YOU FLY

- ☐ BATTERY STATUS
  - CONTROLLER / AIRCRAFT / DISPLAY
- ☐ CHECK "B4UFLY" APP
- ☐ CHECK WINDSPEED / WEATHER
- ☐ VISUALLY INSPECT OPERATION AREA
- ☐ COMPLETE RISK ASSESSMENT
- ☐ ADVISE AIRPORT TOWER
  (IF FLIGHT WILL BE IN CONTROLLED AIRSPACE)

PRE-FLIGHT – AIRCRAFT

- ☐ VISUALLY INSPECT AIRCRAFT
- ☐ ATTACH PROPS & CHECK FOR DAMAGE
- ☐ INSTALL CHARGED BATTERY
- ☐ CONFIRM SD CARD INSTALLED
- ☐ VISUALLY INSPECT CAMERA / LENS
- ☐ REMOVE GIMBLE LOCK

PRE-FLIGHT - SYSTEM

- ☐ POWER ON AIRCRAFT
- ☐ CALIBRATE GPS/COMPASS (EVERY FLIGHT)
- ☐ CHECK GPS SATELLITE CONNECTIONS
- ☐ CHECK IMU STATUS / CALIBRATE IF NEEDED
- ☐ CHECK/SET MAXIMUM & RTH ALTITUDE
- ☐ CHECK RETURN TO HOME POINT

PRE-FLIGHT - CAMERA

- ☐ SET PHOTO TYPE
- ☐ SET IMMAGE SIZE / FORMAT
- ☐ SET ISO / SHUTTER SPEED (IF NECESSARY)
- ☐ SET VIDEO SIZE / FORMAT

TAKE OFF

- ☐ START VIDEO RECORDING
- ☐ ANNOUNCE ROTOR START
- ☐ START ROTORS
- ☐ LOOK/LISTEN FOR PROBLEMS
- ☐ LIFT OFF AND HOVER
- ☐ TEST FLIGHT CONTROLS
  (ACCEND / DECEND / FORWARD / BACK / LEFT / RIGHT / ROTATE)
- ☐ DEPART TAKE OFF AREA

POST-FLIGHT - LANDING

- ☐ CLEAR LANDING AREA / LAND AIRCRAFT
- ☐ POWER DOWN EQUIPMENT
- ☐ INSTALL GIMBLE LOCK
- ☐ SECURE AIRCRAFT

DONT FORGET TO LOG YOUR FLIGHT!

B. Emergency Procedures

BATTERY LOW

- ☐ MAINTAIN VISUAL CONTACT WITH AIRCRAFT
- ☐ IMMEDIATELY RETURN FOR LANDING
- ☐ IF STRONG WINDS PREVENT RETURN FLIGHT
- ☐ LOCATE SAFE LANDING SITE USING CAMERA
- ☐ LAND AIRCRAFT

LOSS OF GPS SIGNAL

- ☐ SWITCH TO "A" OR "ATTI" MODE
- ☐ REGAIN CONTROL OF AIRCRAFT
- ☐ PILOT AIRCRAFT TO SAFE LANDING AREA
- ☐ PERFORM A MANUAL LANDING
- ☐ SHUT DOWN AIRCRAFT

FLY AWAY

- ☐ MAINTAIN VISUAL CONTACT WITH AIRCRAFT
- ☐ CONTACT / NOTIFY ATC (AS REQUIRED)
- ☐ TOGGLE MODE / ATTEMPT TO RE-LINK
- ☐ IF UNABLE, MAINTAIN VISUAL ON AIRCRAFT
- ☐ UPDATE ATC WITH POSITION (AS REQUIRED)

LOST LINK

- ☐ MAINTAIN VISUAL CONTACT WITH AIRCRAFT
- ☐ VERIFY CONTROLLER IS POWERED ON
- ☐ MOVE TOWARD AIRCRAFT IF POSSIBLE
- ☐ IF UNABLE TO REESTABLISH LINK
- ☐ MAINTAIN VISUAL CONTACT WITH AIRCRAFT
- ☐ UPDATE ATC WITH POSITION (IF REQUIRED)

BATTERY FIRE

- ☐ LAND IF POSSIBLE
- ☐ INITIATE MANUAL ROTOR SHUTDOWN IF NOT
- ☐ ATTEMPT TO EXTINGUISH FIRE
- ☐ NOTIFY FIRE DEPARTMENT IF NECESSARY

COLLISION

- ☐ IMMEDIATELY RELEASE CONTROL STICKS
- ☐ IF AIRCRAFT REGAINS STABILITY / HOVER
- ☐ MANEUVER AIRCRAFT AWAY FROM OBJECT
- ☐ RETURN FOR LANDING AND INSPECTION
- ☐ IF AIRCRAFT DOES NOT REGAIN STABILITY
- ☐ INITIATE MANUAL ROTOR SHUTDOWN

EMERGENCY CONTACT INFORMATION

Stockton Metropolitan Airport

209-468-4700

Manteca Police Watch Commander

(209) 456-8153

UAS Program Manager

Lt. Paul Carmona

209-456-8130

VI. Contact Numbers

A. Stockton Metropolitan Airport (1O3)

Manager: RUSSELL STARK
5000 S. AIRPORT WAY ROOM 202
STOCKTON, CA 95206
Phone 209-468-4700

Airport Communications

CTAF: 120.3
NORCAL APPROACH: 125.85
NORCAL DEPARTURE: 125.1
WX ASOS at SCK PHONE 209-468-4700

B. Manteca Police Watch Commander

Watch Commander's Office: 209-456-8153

C. UAS Program Manager

Lt. Paul Carmona:
Office: 209-456-8130

D. UAS Officer in Charge

Det. David Bright
Office: 209-456-8168