



Unmanned Aircraft System Policy

April 2020

Revision Date	Comments
February 4, 2019	Draft prepared to reflect department UAS program level.
April 4, 2019	Final draft approved.
March 9, 2020	Working Draft - Revisions
April 21,2020	Final draft approved for 2020

Purpose:

The purpose of this Standard Policy and Procedure is to provide a uniform policy and process for Maine Department of Transportation employees and third parties working on behalf of the Department regarding the use of unmanned aircraft systems.

General Policy Statement:

The Maine Department of Transportation will permit the use of Unmanned Aircraft Systems (UAS) by MaineDOT employees and third parties working on behalf of MaineDOT for the purpose of conducting business for the Department. The Chief Engineer or designee will serve as the UAS Coordinator., The UAS Coordinator, Pilot in Command, Visual Observers (VOs), and any other personnel involved in UAS flight operations shall follow procedures as outlined in MaineDOT's Standard Operating Procedures document, FAA 14 CFR Part 107, and FAA Advisory Circular 107-2. The UAS Coordinator reserves the right to deny any proposed UAS operation if operational risk exceeds acceptable tolerances or the operation will violate FAA regulations or Department policy. UAS policy, guidelines, procedures, and implementation should be reviewed annually.

Privacy

Maintaining privacy to the public during UAS operations is of utmost importance to MaineDOT. All PICs and VOs shall follow the privacy guidelines as outlined in MaineDOT's UAS Standard Operating Procedures document. Requests for photos or other materials obtained via MaineDOT UAS operations shall follow the same policies and procedures as all other such request to the Department.

Staffing

UAS usage will be authorized by Bureau/Office Directors for purposes consistent with Department permitted use as detailed below. The Bureau/Office Director shall determine appropriate UAS staffing levels for their Bureau/Office, including the assignment of a Pilot(s) in Command and Visual Observers. Bureaus/Offices may request UAS services from other Bureaus/Offices as outlined in Section 8.1 of MaineDOT's Standard Operating Procedures document.

Use of UAS

UAS may be used whenever such use will provide cost efficiency, safety benefit, improved data quality, or any other reason MaineDOT personnel deems necessary as approved by a Bureau or Office Director. Examples of permitted use include (but are not limited to) photogrammetry/3D

modeling, aerial photography, infrastructure inspection, environmental analyses, slope failure analysis, confined space inspections, disaster response, and training exercises.

UAS Operations Management

All UAS operations shall be conducted as outlined in MaineDOT's UAS Standard Operating Procedures document. Any operational procedures not outlined in MaineDOT's UAS Standard Operating Procedures document shall be conducted as described in FAA 14 CFR Part 107 and FAA Advisory Circular 107-2.

UAS Procurement

UAS equipment shall be procured by only the Bureaus/Offices listed below. Procurement will be in accordance with applicable Department procurement policies and procedures. UAS equipment privately owned by MaineDOT employees shall not be used for official MaineDOT UAS activities.

Authorized to Procure UAS

- Creative Services
- Bureau of Project Development – Property Office
- Bureau of Maintenance & Operations – Bridge Maintenance Division

Data Management

Data retention practices shall adhere to the guidelines as described in MaineDOT APM No. 121.

Third Party Contracting for UAS Services

All third parties are required to comply with FAA 14 CFR Part 107 and FAA Advisory Circular 107-2 when conducting UAS operations on behalf of MaineDOT. Third party contractors are responsible for all insurance, FAA licensing, and waivers/airspace authorizations required for the requested services. UAS Service providers will operate in accordance with all State of Maine and MaineDOT consultant service policies and procedures.

Training

All MaineDOT PICs will be certified as FAA Part 107 remote pilots. Training standards and schedules will be administered as outlined in MaineDOT's UAS Standard Operating Procedures document.

Reimbursement of Testing Fees for Assigned Employees

MaineDOT will provide reimbursement for fees related to obtaining FAA Part 107 Remote Pilot certification, including bi-annual testing fees at FAA approved CATS locations. Assigned employees will be responsible to provide documentation for any expenses incurred related to obtaining this certification. Reimbursement shall be consistent with APM #193, Policy on Payment of PE, PLS, FE-EIT and LSIT License Reviews.

Communications

Inquiries from the news media must be forwarded to the MaineDOT press secretary. PICs/Observers shall follow currently established Department policy regarding interactions and inquiries from the media. Complaints or inquiries regarding UAS operations must be referred to the UAS Coordinator.

Links

[FAA – Unmanned Aircraft Systems](#)

[Summary of Part 107 Rule](#)

[Advisory Circular 107-2](#)

[14 CFR Part 107](#)



MaineDOT

Unmanned Aircraft System Standard Operating Procedures

April 2020

Revision Date	Comments
February 1, 2019	Draft prepared to reflect department UAS program level.
April 4, 2019	Approved
March 9, 2020	Working Draft - revisions
April 21, 2020	Final Draft Approved for 2020

TABLE OF CONTENTS

1. PREFACE	4
2. PHILOSOPHY AND MISSION STATEMENT	4
3. PROTECTION AND RIGHTS OF PRIVACY	4
4. DEFINITIONS	5
5. ADMINISTRATION	5
5.1 OPERATIONS MANUAL	5
5.2 ORGANIZATION	5
5.3 PERSONNEL	6
5.4 FACILITIES	6
5.5 SCHEDULING	6
5.6 MISCELLANEOUS	7
6. SAFETY	7
6.1 SAFETY POLICY	7
6.2 OPERATIONAL HAZARD AND OCCURRENCE REPORT (OHOR) AND INVESTIGATION	7
6.3 SAFETY OFFICER – PIC/OBSERVER/COORDINATOR	8
6.4 SAFETY TRAINING	8
6.5 MEDICAL FACTORS	8
7. TRAINING	9
7.1 OBJECTIVE	9
7.2 INSTRUCTORS	9
7.3 TRAINING PLANS	9
7.4 INITIAL TRAINING	9
7.5 RECURRENT TRAINING	10
7.6 MISCELLANEOUS	10
8. GENERAL OPERATING PROCEDURES	10
8.1 REQUEST FOR UAS SUPPORT	10
8.2 CALL-OUT PROCEDURE	10
8.3 DEPLOYMENT PRIORITIES	10
8.4 FLIGHT BOUNDARIES	10
8.5 MINIMUM PERSONNEL REQUIREMENTS	11
8.6 PERSONNEL RESPONSIBILITIES FOR DEPLOYMENTS	11
8.7 PERSONAL EQUIPMENT	11
9. PRE-FLIGHT/POST-FLIGHT ACTIONS	11
9.1 INSPECTIONS	11

9.2 WEATHER	12
9.3 DOCUMENTATION	12
9.4 PLANNING	12
9.5 CHECKLISTS	12
9.6 MAINTENANCE	12
10. LINKS	12

1. Preface

The following procedures are intended to promote safe, efficient and lawful operation of MaineDOT unmanned aerial systems (UAS). Safety, above all else, is the primary concern in every operation, regardless of the nature of the mission.

2. Philosophy & Mission Statement

It shall be the mission of those personnel of MaineDOT who are trained in the use of UAS to use this resource to perform flight and maintenance duties in a safe and efficient manner.

It shall be the intent of every Pilot In Command (PIC) to follow MaineDOT policies of privacy when operating the UAS. When operating the UAS, MaineDOT PICs will abide by all FAA Regulations for flight and will receive the proper authorizations for flight, if necessary.

3. Protection of Rights and Privacy

PICs and observers ensure the protection of private individuals' civil rights and expectations of privacy before deploying the UAS. PICs and observers ensure and are held accountable for ensuring that operations of the UAS intrude to a minimal extent upon the private persons and businesses. To accomplish this primary goal, MaineDOT observes the following:

1. Whenever possible, as to not interfere with standard operations, the onboard cameras are turned so as to be facing away from occupied structures, automobiles, etc. to minimize inadvertent video or still images of uninvolved persons or property.
2. All authorized missions for MaineDOT UAS are for:
 - a. Photogrammetry/3D Modeling, asset management/inspections, general photography, and other MaineDOT related activities.
3. A committee meets periodically to review the existing UAS procedures as well new technologies, laws, and regulations on UAS usage.
4. MaineDOT UAS operate strictly within all laws and regulations. We ensure that the proper forms and authorizations are applied for and obtained prior to operating the UAS. We balance all operations with the need to accomplish the mission while maintaining MaineDOT's policy on public privacy.
5. A thorough review of the flight plan will be conducted prior to flight to determine if privacy is a concern.

4. Definitions

1. UAS: an aircraft without a human pilot onboard
2. UAS Coordinator: Department personnel in charge of the coordination and operation of UAS operations.
3. Pilot In Command (PIC): the pilot in control of the aircraft who is ultimately responsible for its operation and safety in flight.
4. Visual Observer (VO): The Visual Observer is there to make sure the aircraft maintains line of site and to assist the PIC in safe operation of the aircraft.

5. Administration

5.1 Operations Manual

1. The policies and procedures contained in this manual are issued by MaineDOT.
2. This manual is not intended to be all-inclusive, but as a supplement to other MaineDOT guidelines, Federal Aviation Administration regulations, pre-flight safety checklists, aircraft manufacturers' approved flight manuals, and other pertinent information related to the operation of Department UAS.
3. This manual has been written to address UAS operations as they existed when it was drafted. Equipment, personnel, environment (internal and external), etc., change over time. The management of change involves a systematic approach to monitoring organizational change and is a critical part of the risk management process. Given this, it is essential that this manual be continually updated as necessary. The entire manual must be reviewed, at a minimum, annually to assure it is up to date. Any changes to the manual will be communicated as currently dictated by Department policy.
4. A copy of the manual (electronic and/or paper) is issued to every person having UAS responsibilities.
5. MaineDOT personnel shall reference FAA Advisory Circular 107-2 (AC107-2) for any rules or regulations not specifically contained within this Standard Operating Procedure document.

5.2 Organization

1. The Chief Engineer or designee will serve as the department UAS coordinator.
2. The UAS unit is comprised of those personnel approved by MaineDOT Bureau/Office Directors and includes PICs, VOs, and others deemed necessary and have assignment as part of the UAS crew.
3. Assignment to the UAS crew is selected by MaineDOT from specially trained staff members of MaineDOT with knowledge of the airspace within which the operation will take place and how that airspace fits into the National Airspace System (NAS). All PICs will have obtained FAA Part 107 certification and proper training prior to operation of any Department UAS.

5.3 Personnel

1. UAS Coordinator Responsibilities:
 - a. Administer and maintain the department Policy and Standard Operating Procedures documents.
 - b. Establish and maintain periodic meetings for the technical user's group.
 - c. Approve flight requests as outlined in this and other documents.
 - d. Duties as outlined in other portions of this document.
 - e. The UAS Coordinator may act as a PIC/VO if qualified to do so.
2. Pilot In Command Responsibilities:
 - a. The UAS pilot in command (PIC) is responsible for the overall direction and performance of the UAS unit and exercises command and control over the aircraft at all times.
 - b. To be considered for selection as a PIC, applicants must meet the requirements for operation of a Department UAS as determined by the UAS Coordinator, including, but not limited to, FAA Part 107 remote pilot certification.
 - c. PICs may be temporarily removed from flight status at any time by the UAS Coordinator, for reasons including performance, proficiency, physical condition, etc. Should this become necessary, the PIC will be notified verbally and in writing of the reason, further action to be taken, and expected duration of such removal.
 - d. The PIC will comply with all rules in regulations outlined in FAA AC107-2.
3. Visual Observer Responsibilities
 - a. The remote pilot in command must ensure that the visual observer is able to see the UAS in the manner specified in 14 CFR 107.
 - b. The pilot in command must maintain effective verbal communication with the visual observer at all times.

5.4 Facilities

1. UAS operations are housed and maintained at facilities designated by MaineDOT.
2. Personnel must not leave the designated facility without ensuring that the UAS equipment is properly secured.

5.5 Scheduling

1. To facilitate the use of the UAS, it shall be made available to the UAS flight crew as the schedule requires.
2. To maintain a level of proficiency with the UAS, PICs are required, as part of

their acceptance into the UAS flight crew, to attend training as often as the UAS Coordinator deems necessary. Training is coordinated through the UAS flight crew and announced in advance for scheduling purposes.

5.6 Miscellaneous

1. Inquiries from the news media must be forwarded to the MaineDOT press secretary. PICs/Observers shall follow currently established Department policy regarding interactions and inquiries from the media.
2. Requests for support from third-parties will be responded to by the UAS Coordinator. Proper policy and procedure, as well as FAA regulations, must be followed when accepting mutual aid support for the UAS.
3. Complaints or inquiries regarding UAS operations must be referred to the UAS Coordinator.

6. Safety

6.1 Safety Policy

1. MaineDOT is committed to having a safe and healthy workplace, including:
 - a. The ongoing pursuit of an accident free workplace, including no harm to people, no damage to equipment, the environment, or property.
 - b. A culture of open reporting of all safety hazards in which management will not initiate disciplinary action against any personnel who, in good faith, disclose a hazard or safety occurrence due to unintentional conduct.
 - c. Support for safety training and awareness programs.
 - d. Conducting regular audits of safety policies, procedures and practices.
 - e. Monitoring the UAS community to ensure best safety practices are incorporated into the organization.
2. The flight crew must always follow safety guidelines as outlined in AC107-2.
3. 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 so that corrective action may be taken.

6.2 Operational Hazard and Occurrence Report (OHOR) and Investigations

1. Occurrences are unplanned safety related events, including accidents and incidents that could impact safety. A hazard is something that has the potential to cause harm. The systematic identification and control of all major hazards is foundational to safety.
2. The OHOR concept provides a mechanism to report hazards and occurrences, real and perceived, to those responsible for UAS operations.
3. The OHOR should be used without hesitation to report any anticipated, current, or experienced safety hazard, or occurrence. Further, the OHOR can be submitted

- anonymously, and to whatever level in the chain of command, to get the matter proper attention, without fear of reprisal.
4. Written memorandums fully explaining the hazard or occurrence will be given to the UAS Coordinator for investigation.
 5. Every hazard and/or occurrence is investigated, with the results and corrective action taken communicated to all members. The investigation will be conducted by the UAS Coordinator or any other member of the Department who has the authorization necessary to do so.
 6. Hazards requiring immediate attention may be brought to the attention of the UAS Coordinator verbally.
 7. All MaineDOT personnel are authorized to take action to correct a hazard if, in that member's opinion, delay will result in accident or injury. The UAS Coordinator will be notified immediately in such situations.

6.3 Safety Responsibilities - PIC/Observer/Coordinator

1. In regards to safety, all members of the UAS flight crew are responsible for the following:
 - a. Ensuring all flight operations personnel understand current applicable regulatory requirements, standards, and Departmental safety policies and procedures.
 - b. Follow all safety procedures as described in AC107-2.
 - c. Safety is the responsibility of ALL members of the UAS unit.

6.4 Safety Training

1. All members shall receive training in the following subjects prior to operating the UAS:
 - a. Department UAS Policy and Standard Operating Procedures
 - b. UAS crew member's role in safety
 - c. Emergency safety procedures
 - d. FAA safety procedures as outlined in AC107-2
2. All members shall review the Department UAS policy and procedures on an annual basis and that review shall be noted in their training history.

7. Training

7.1 Objective

1. The key to continued safe operations is by maintaining a professional level of competency. The first step in this process is establishing minimum qualifications for selecting members, and the second step involves training those personnel.

7.2 Instructors

1. Instructor duties are designated by the UAS Coordinator. All PICs will complete annual training before operating the aircraft.
2. Other instructional materials deemed necessary for safe UAV operation are to be determined by the UAS Coordinator and will be administered at their discretion.

7.3 Training Records

1. All members will maintain records of training activities and make those records available to the UAS Coordinator. Failure to maintain records may require corrective actions, including dismissal from the UAS program..
2. An approved training plan and/or specific training may be required by the UAS Coordinator.
3. All deployments or exercises will be documented and count toward a member's training.
4. It is the member's responsibility to verify their training file contains all pertinent information.

7.4 Annual Training

1. PIC's must complete the annual training to be eligible to serve in those capacities for the year. This training is held in early spring.
2. Before a member can fly as an PIC, they must obtain FAA Part 107 certification through an approved testing facility. They also must be sufficiently trained to operate the aircraft in a safe and effective manner as determined by the UAS Coordinator. This must be accomplished to show their ability and knowledge of the UAS.
3. Visual observers are encouraged to attend the annual training in order to become familiar with department UAS operations.

7.5 Recurrent Training

1. All members within the unit shall maintain proficiency in their PIC/observer abilities.
2. Recurrent training for PIC's will include periodic UAS maneuvers that are documented.
3. Other training may be required by the UAS Coordinator.
4. Failure to prove proficiency can result in removal from UAS responsibilities.

8. General Operating Procedures

8.1 Request for UAS Support

1. Requests for UAS support shall be made through the UAS Coordinator.
2. Bureaus/Offices that do not have UAS personnel or equipment may request services from other Bureaus/Offices through the UAS Coordinator. Use and prioritization will be at the discretion of the UAS Coordinator.
3. If necessary, the UAS Coordinator or PIC will submit FAA waivers in sufficient time before the proposed mission.
4. For flights solely on Department property (for example, RAP stockpiles and M&O facilities) a blanket request approval may be submitted on an annual basis. The request must receive Bureau/Office Director permission. Individual flights under an approved blanket request will still be documented by the PIC.

8.3 Deployment Priorities

1. If several separate requests for UAS support are received simultaneously, they shall be prioritized by the UAS Coordinator.

8.4 Flight Boundaries

1. The PIC will observe all operational standards in AC107-2, including (but not limited to) rules for operations over people and occupied vehicles.

8.5 Minimum Personnel Requirements

1. The minimum personnel required on ALL missions will be a PIC (Pilot in Command) and VO (Visual Observer). Under no circumstances will a PIC attempt to complete a deployment alone.
2. Although training is not considered a mission, an observer shall be used.

8.6 Personnel Responsibilities for Deployments

OPEN COMMUNICATION ACHIEVES SAFE OPERATIONS

1. PIC (Pilot In Command)
 - a. The PIC is directly responsible for, and is the final authority over the actual operation of the UAS.
 - b. The PIC will follow all operational guidelines as outlined in AC107-2.
 - c. PICs shall be responsive to the requests of the observer in order to safely and effectively complete the mission.
 - d. PICs shall be responsible for their personal documentation for mission training and updating of flight books.
2. Visual Observer

- a. Observers shall assist the PIC in the main objective of safe operations of the UAS as outlined in AC107-2.
- b. Observers shall be responsible for their personal documentation for mission training and updating of flight books.

8.7 Personal Equipment

1. PICs/Observers shall wear Personal Protective Equipment (PPE) in compliance with standard MaineDOT safety protocol.
2. PICs/Observers will take into consideration the current weather conditions when planning to deploy, and wear appropriate clothing to deploy comfortably.
3. Use of a radio, cell phone, or other device is strictly prohibited by the PIC during flight.
4. PICs/Observers shall wear clothing that easily identifies them as MaineDOT members.

9. Pre-Flight/Post-Flight Actions

9.1 Inspections

1. PICs/Observers are both responsible for a thorough preflight inspection of the UAS as outlined in AC107-2.
2. Any physical equipment issues that cannot be resolved on-site, and which have an impact on safety or the mission, will override the deployment. These issues must be resolved before flight.

9.2 Weather

1. Prior to deployment, the PIC/observer will gather weather information for the area of deployment. The PIC shall utilize FAA approved weather resources to obtain the latest and most current weather conditions as outlined in AC107-2.
2. If weather is determined to be unsafe for deployment, the PIC may terminate or delay the operation.

9.3 Planning

1. The PIC/VO shall familiarize themselves with all available information concerning the deployment including, but not limited to, the weather conditions, hazards, deployment goals, etc.
2. The PIC will ensure that the location for take-off and emergency landing is adequate for a safe deployment.
 - a. The take-off/landing area should be clearly marked and identifiable with cones or a landing pad.
3. PICs will ensure that they are aware of their surroundings in the event that an

- emergency landing is necessary. This includes the ability to recover the UAS.
4. PIC's will ensure that the role of the VO is clearly stated and understood.

9.5 Checklists

1. PICs shall utilize pre-flight checklists to ensure the highest level of safety for deployment.
2. Prior to flight, the flight log shall be initiated.

9.6 Maintenance

1. The UAS equipment owner will ensure that a proper maintenance schedule is followed and documented.
2. UAS equipment maintenance documentation will be made available to the UAS Coordinator upon request.
3. UAS maintenance best practices shall be followed as outlined in AC107-2.

10. Links

[FAA – Unmanned Aircraft Systems
Summary of Part 107 Rule
Advisory Circular 107-2
14 CFR Part 107](#)