

Building Safety Division Policy

DRAFT 4/30/18

Title: Unmanned Aerial Systems (UAS) Use by CDD Staff

1. Purpose

The purpose of this policy is to insure the County of Los Alamos comply with all federal, state and local legal requirements related to the use of unmanned aircraft systems (UAS) by the County Building Inspectors. The County Building Safety Division shall use the UAS for roof inspections only.

2. Eligibility

The UAV flight shall only be performed by a building inspector that is a Los Alamos County employee commercially licensed by Federal Aviation Administration (FFA).

3. Scheduling

The UAS will only be deployed with:

- Prior written approval from homeowner
- Contractor/homeowner to schedule inspection
- UAS will contact the airport before flying within the 5-mile radius.

4. Guidelines

Safe use is the primary priority and any use of the UAV must be approved in advance by the Chief Building Official.

All flights must meet the following guidelines:

- UAS shall never be flown on LANL property
- Aircraft shall remain on the premises where express written consent to operate is provided by all legal interest holders on private property
- Aircraft shall remain within 400 feet of the operator

- Aircraft must stay below 400 feet in the air or 10 feet above the structure whichever is less
- All reasonable attempts will be made to avoid capture of footage from private property, particularly enclosed property (backyards, storage areas, behind private fences, etc.) unless given owner's permission
- The UAV shall not be flown over crowds
- The maximum sustained outdoor wind airspeed should be 10 MPH or less
- The UAV shall not be flown in adverse weather conditions
- The UAV will only be flown by County personnel who have been trained on the vehicle's use and have their commercial license
- During UAS flights, the County employee shall wear a County uniform or other visible County identification clearly indicating the UAS is being flown by the County employee.
- A log shall be used to establish time, date and who flew the UAS

County Manager Approval/Date

Dept. Approval: _____ Date: _____

Communications & Public Relations (C&PR) Division Policy

DRAFT 6/4/18

Title: Unmanned Aerial Systems (UAS) Use by C&PR Staff

1. Purpose

The purpose of this policy is to insure the Communications & Public Relations Division complies with all federal, state and local legal requirements related to the use of unmanned aircraft systems (UAS) by C&PR Employees. The division shall further comply with the County Manager's Policy governing the use of UAS and it is incorporated here by reference (Policy 0290).

Within C&PR, trained employees shall employ the UAS solely for the purpose of:

- 1) Capturing video footage promoting "quality of life" scenes in Los Alamos, for public information purposes or economic development/marketing and tourism purposes, such as aerial footage of an event.
- 2) Documenting before and after conditions, using video, for public information telling the story of a project, such as restoration of a canyon trail, or, construction time lapse of a building being constructed on a site.

2. Employee Use

The UAV flight shall only be performed by a Visual Information Specialist who is a Los Alamos County employee who meets the training requirements set forth in the County Manager's Policy 0290.

3. Scheduling flights

The UAS will only be deployed after complying with the requirements set forth in the County Manager's policy. A log will be completed for C&PR tracking that outlines time, date, purpose, location, and name of the employee operating the UAS.

4. **Process**

Safe use is the primary priority and any use of the UAV must be approved in advance by the C&PR Administrator. The County Manager's policy permits C&PR to operate the UAS within a range of parameters in order to meet business use and purpose as described in (1) above. C&PR sets forth the additional policy for specific use for this purpose:

- All reasonable attempts will be made to avoid capture of footage from private property, particularly enclosed property (backyards, storage areas, behind private fences, etc.) unless given owner's permission
- The UAS shall not be flown over crowds
- The maximum sustained outdoor wind airspeed should be 10 MPH or less
- The UAS shall not be flown in adverse weather conditions

County Manager Approval/Date

Dept. Approval: _____ Date: _____

Information Management (IM) Division Policy

DRAFT 6/4/18

Title: Unmanned Aerial Systems (UAS) Use by IM Staff

1. Purpose

The purpose of this policy is to insure the IM Division complies with all federal, state and local legal requirements related to the use of unmanned aircraft systems (UAS) by the County Employees. The division shall further comply with the County Manager's Policy governing the use of UAS and it is incorporated here by reference (Policy 0290).

Within IM, trained employees shall employ the UAS solely on behalf of the County Assessor, for the business purpose of collecting topographical survey data on or over properties.

2. Employee Use

The UAS flight shall only be performed by the GIS Administrator who is a Los Alamos County employee who meets the training requirements set forth in the County Manager's Policy 0290.

3. Scheduling flights

The UAS will only be deployed after complying with the requirements set forth in the County Manager's policy. A log will be completed for Division tracking that outlines time, date, purpose, location, and name of the employee operating the UAS.

4. Process

Safe use is the primary priority and any use of the UAS must be approved in advance by the Chief Information Officer. The County Manager's policy permits the Division to operate the UAS within a range of parameters in order to meet business use and purpose as described in (1) above. The UAS operates over a broad expanse of geographical locations at a height of approximately 200 feet. It would not be practical as a matter of business to obtain consent from every property owner or occupant for these types of flights, however, IM does

register the geographical boundaries of flight 24 hours in advance on the Airport's webpage

County Manager Approval/Date

Dept. Approval: _____ Date: _____

Skyland Fire & Rescue



LAFD UAS Policy

UNMANNED AERIAL SYSTEMS Guidelines & Policies

May 31, 2018

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Definitions/Abbreviations

Team Leader – Must be operating under Part 107.

PIC (pilot) – May be deemed lead pilot if operating under the supervision of a “Team Leader”, or their own Part 107 certification.

AGL – Above Ground Level
ATC – Air Traffic Control
COA – Certificate of Authorization
FAA – Federal Aviation Administration
MSL – Mean Sea Level
PIC – Pilot in Control

PIO – Public Information Officer
UAS – Unmanned Aerial System
VFR – Visual Flight Rules
VLOS – Visual Line of Sight
VO – Visual Observer

Purpose

This manual is intended to promote safe, efficient and lawful operation of the Los Alamos County Fire Department unmanned aerial systems (UAS). Safety is the primary concern in every operation, regardless of the nature of the mission.

UAS Mission Statement

The mission of the Los Alamos County Fire Department UAS program is to protect lives, property, and first responders in a constitutionally and legally sound manner.

UAS use is growing rapidly across the country and will have a large impact on all aspects of emergency response. A UAS can support any department in any type of situation that would benefit from an aerial perspective or in environments extremely hazardous to responders. Examples include: finding missing persons; traffic management; search and rescue operations; fire ground support; hazardous materials incidents; examination of dangerous structures; hostage situations; and any other task that can be accomplished from the air in an efficient and effective manner.

The management of the UAS operations will utilize the National Incident Management System. It shall be the responsibility of every UAS Team to make reasonable effort not to invade a person’s reasonable expectation of privacy when operating the UAS. When operating the UAS, the department will abide by all state and federal rules and regulations. If requested to assist in criminal investigations, the need, availability and use of the UAS will not supersede the issuance of a warrant when required or the UAS’s initial priority of the department.

Organization and Assignment of Responsibilities

A UAS Operations Group will be established for the department’s UAS program and shall consist of a Pilot and Team Members. A community member will be urged to participate and share any concerns the public

may have. To be functional this group should be kept at a maximum of five people. The UAS Team Leader is responsible for the supervision and command of the UAS Team on a mission.

UAS Coordinator (Fire Chief or Designee)

- Maintaining all training and flight records for each team member as well as maintenance records;
- Maintain contact with the FAA and be aware of regulations as they change;
- Evaluate airframe(s) based on mission needs;
- Maintain proficiency on all UAS's operated by the Team.
- Post a mission summary if requested, to media outlets through the PIO.

UAS Team Leader (Pilot)

- Maintain a FAA Part 107 Remote Pilot Certification.
- Team Leaders interacting with Air Traffic Control (ATC) shall have sufficient expertise to perform that task readily. They also must have an understanding of, and comply with FAA and Military Regulations applicable to the airspace where the UAS will operate.
- A Team Leader's primary duty is to ensure the safe and effective operation of the department's UAS in accordance with the manufacturers' approved flight manual, all Federal and State regulations, and other departmental policies and procedures.
- Team Leaders may be temporarily removed from all flight status at any time for reasons including performance, proficiency, physical condition, etc... If this becomes necessary, the member will be notified both verbally and in writing of the reason, further action expected to be taken and duration of such removal.

Observers

- An observer's primary duty is to assist in the operation of all UAS equipment including cameras, FLIR, radio communications with other personnel as well as being an observer for anything that may affect the PIC's primary duty (see and avoid).

Safety Officer

In regards to safety, the UAS Observer may have to function as the Team Safety Officer and is responsible for the following:

- Ensuring all team members understand applicable regulatory requirements, standards and the organizational safety policies and procedures.
- Observe and control safety systems by monitoring all operations.
- Review standards and practices of individual members as they may impact operational safety.
- Communicate all reported safety related problems and the corrective action taken to the on-scene Team Leader. If there were any in-flight problems or learned experiences, the proper procedures for handling that problem should be discussed.
- Notify Command of all pertinent safety information.
- It is emphasized again that safety is the responsibility of ALL members of the UAS Team.

Personnel Responsibilities for Deployments

Team Leader / PIC

- The Team Leader is directly responsible for, and is the final authority over the actual operation of the UAS.
- Leaders have absolute authority to reject a flight based on personnel safety or violation of FAA regulations. No member of any department, regardless of rank, shall order a Leader to make a flight when, in the opinion of the Leader, it poses a risk to personnel or is in violation of FAA regulations.
- Leaders are responsible for compliance with this manual, department policy and procedure, State and Federal regulations.
- The Leader's main duty is to oversee the operation of the UAS while accomplishing the goals of the mission.
- PIC shall see-and-avoid any obstacle that will lessen safety during the mission.
- PIC shall be responsive to the requests of other Team Members in order to accomplish the mission.
- Leaders shall be responsible for maintaining an ICS 214 Unit Log or Flight Log.
- In the event of the PIC becoming incapacitated or incapable of continued flight, the observer or Leader will utilize the Return to Home (RTH) feature.
- The PIC should not be conducting radio communications, cell usage, or anything else deemed distracting while flying.

Observer

- Observers shall assist with see-and-avoid any obstacle that will lessen safety during the mission.
- Observers shall have the ability to operate any attachments to the UAS, allowing the PIC to maintain complete focus on the operation of the UAS.
- Observers shall remain alert for suspicious persons or activities on the ground and coordinate response by ground units.
- Observers shall monitor the radio for updates and relay anything relevant to the Team.
- Observers shall assist the PIC in the main objective of safe operations of the UAS.
- Observers shall assist with documentation of the mission and updating flight books.

Personal Protective Equipment

Although there is no specific uniform for the UAS Team or required for proper operation of the UAS, the Team will take necessary measures to deploy in a professional manner and take into consideration that all deployments are subject to public document requests and that media outlets may be present.

- a. Team members should wear high visibility vests to allow easy identification while on-scene.
- b. Members will take into consideration the current weather conditions when planning to deploy, and wear appropriate clothing to deploy comfortably.
- c. There are no documented issues with the use of the radio or cellular phones during the deployment of the UAS, but the PIC should at all times take into consideration safe operation of the UAS when using the radio or other devices.

Facilities

- LAFD owned UAS equipment will be housed and maintained at the department's administration office.
- Personnel will not leave the department without making sure the UAS equipment is secured.
- All personnel are equally responsible for maintaining the UAS in a neat, clean and orderly fashion.

Scheduling

- To facilitate the broad use of the UAS, it shall be made available to all agencies where its use could be beneficial to life and property, is feasible, does not interfere with a current department mission, or leaves the department under staffed.
- To maintain a level of proficiency with the UAS, personnel will be required, as part of their acceptance into the UAS Team, to attend quarterly training. Training will be coordinated through the Chief or their designee and announced in advance for scheduling purposes.
- At no time will the UAS be “loaned” to another agency.

Miscellaneous

- Inquiries from the news media will be forwarded to the Public Information Officer and the Chief or designee.
- Leaders/Observers shall follow currently established department policy regarding interactions and inquiries from the media.
- Requests for support from other government agencies within, or outside the department will be responded to by the Chief or designee for consideration. Should the request involve an immediate threat to life, or property, any Leader is authorized to accept or decline the request. Proper policy and procedure, as well as FAA regulations shall be followed when accepting mutual aid support for the UAS.
- At no time will the UAS be deployed without the departments UAS Team.
- Complaints or inquiries regarding UAS operations shall be referred to the Chief or designee.

CONCEPT OF OPERATIONS

Protection of Rights and Privacy

- During UAS Operations, the Team will have safety, the protection of citizens civil rights and reasonable expectations of privacy as a key component during any decision made to deploy the UAS. UAS pilots and observers will ensure that operations of the UAS that intrude into citizen’s property are kept to a minimum or not at all.
- To accomplish this primary goal, we will:
 - Maintain all video and still images in strict compliance with department policies and procedures
 - The UAS will not conduct random surveillance activities.
 - The use of the UAS will be tightly controlled and regulated.
- Examples of authorized UAS missions are but not limited to:
 - Video/photographs for investigative support
 - Mapping
 - Facility or other inspections
 - Traffic management

- HAZMAT Response
 - Search and Rescue
 - Swift water rescue
 - Barricaded Persons (in accordance with this and all other policies along with local laws). Subject to Board approval.
 - Scene documentation
 - Inspections of public infrastructure or hazardous areas
 - Structure & Wildland fire support
 - Disaster Response
 - Training
- All requested uses will be approved by either of the following designated officials:
 - Chief Officer or designee
 - Any Leader if request involves life safety of other emergency personnel or the public.
 - A committee will be formed and meet minimum every 6 months, preferably each quarter for reviewing the existing UAS missions as well as new technologies, laws and regulations on UAS usage. The committee will consist of personnel from the following:
 - Fire Chief, Department Pilots, and / or County Administrator or designee
 - The committee will present all proposed policy and procedure changes to the Chief for their review in accordance with current guidelines and will solicit feedback prior to making any policy change.
 - The departments UAS program will operate strictly within the law and regulations. Each mission will be balanced with the need to accomplish the mission while maintaining public privacy and the freedom from intrusion without jeopardizing the UAS primary mission of protecting life.

Request for UAS Support

1. Requests for an **emergency** UAS mission should be made through the Los Alamos County Communications Center who will contact or page the department.
2. Routine requests will be by email or phone call to the department.
3. The department will log all scheduled UAS missions on the department calendar.
4. The UAS may be requested by a taxpayer to have aerial imaging of “their property” if such mission coincides with required flight training, is during daylight hours, does not interfere with any other already scheduled mission or other emergency, and meets all other applicable policies. This must be approved by a Chief Officer or Board President. If the mission is flown, all imaging will be given to the owner of the property and not shared with any other parties.
5. Requests for a UAS mission can be made at any time during the day or night.
6. If a request is made for UAS support during non-business hours, Communications will request mission approval through standard after hours contact procedures.
7. In all cases, emergency requests involving public safety will override all scheduled and nonemergency requests.
8. No unauthorized flights are permitted.
9. Each person utilizing the UAS is responsible for adhering to the UAS Policy Manual.

10. Night operation requests must meet the departments strict Risk vs Benefit assessment, be deemed a life safety situation. Vertical night operations such as monitoring a structure fire can be done provided there is ample clearances for both the LZ and area of operations.

Call-Out Procedures

All UAS missions will be screened and authorized by one of the following:

- Fire Chief or designee

Missions will be screened using the following factors:

1. Is the proposed use of the UAS within the capabilities of the UAS equipment and personnel to perform?
2. Does the proposed use of the UAS fall within the FAA regulations and all other policies and procedures?
3. Can the UAS be deployed safely given current weather conditions?
4. If the UAS deployment requires a warrant, has one been requested and approved?
5. Are sufficient trained and qualified personnel available to safely operate the UAS?

UAS Authorization will either be accepted or declined based on the request and current conditions. If the request is denied the denying official will provide a reason for declining the support mission. If the mission is accepted, the Chief or designee will contact a UAS leader/Observer and will relay all available mission information.

Upon arrival at the scene, the leader will make contact with the Incident Commander to obtain a briefing on the mission requested. The UAS Leader will make an on scene determination of the ability to perform the mission such as can the request be conducted safely.

- **The UAS also will at no time operate without the authorization of both the IC and other aircraft pilots.**
- **The UAS Team will have direct radio communication with ALL other aircraft involved in the mission either themselves or through the OIC assigning a liaison to the Team. The person having contact will remain within close proximity to the UAS pilot.**
- **Prior to takeoff, the pilot of any aircraft operating on scene will be contacted for authorization of flight.**
- **In many instances both, the UAS and other aircraft can safely operate on scene together through proper communications.**
 - *Examples: a spotter plane with the NCFS operating on scene advises that he is operating above X00 AGL and is comfortable with the UAS remaining below X feet AGL.*
- **The UAS at no time will operate in an area that other aircraft are actively conducting fire suppression efforts.**
- **The UAS will at no time takeoff unless all other aircraft both manned or unmanned operating on scene can be made aware.**

If the UAS Leader determines that the use of the UAS would violate department policy or directives, the UAS Leader will inform the Incident Commander of the potential conflict along with recommendations for modifying the requested mission to conform to the department's policies and procedures. As this is a change from the original approved mission, the UAS Leader will contact the UAS Team's chain of command for

direction on how to proceed. As soon as possible after the completion of the mission, the UAS Leader will make a full report of the circumstances and their concern through the chain of command.

UAS Leaders will have sole discretion for declaring unsafe conditions or violations of any rules or regulations. If the UAS Leader determines that a request would violate any rules, regulations, or endanger civilians the UAS Leader will respectfully inform the Incident Commander of the reason(s) for refusing to operate the UAS and will contact the UAS chain of command immediately. The UAS will not be flown in this circumstance and the authority of the UAS Leader is **absolute**.

If the UAS Leader determines that, the requested mission will potentially damage the UAS or its associated equipment the UAS Leader will inform the Incident Commander of their concerns. If the Incident Commander, orders the UAS Leader to conduct the mission, the Leader will contact the UAS Teams chain of command, as this is a deviation of the originally approved mission.

Deployment Priorities

- The UAS shall not be used for the purpose of random surveillance.
- If several separate requests for UAS support are received simultaneously, they shall be prioritized.
- In general terms, requests for UAS support are prioritized as:
 1. Life Safety
 2. Property Conservation
 3. Incident stabilization
 4. Evidence / Documentation

Basic Operational Requirements

- All missions 30 minutes after official sunset and until 30 minutes before sunrise will require operation of anti-collision lights;
- Maximum speed is 40 mph;
- Visual observation by the pilot and observer must be maintained at all times unless under a valid exemption.
- No attachments will be added that increase the unit weight including payload above the UAS specs.
- Unless at a public safety function the UAS cannot be flown over crowds.
- A pre-flight check will be conducted of the UAS before each operation by the PIC and one other Team member.







Pre-flight/Post-Flight Actions

Inspections

- a. Before and after each deployment (whether an incident or training), the PIC and observer shall conduct a thorough inspection of the UAS in accordance with the instructions contained in the manufactures user's manual.
- b. Any issues found that would put in jeopardy the safe operation of the UAS shall be documented and resolved immediately prior to flight.
- c. It has been recognized that the use of a checklist is a significant method to combat UAS accidents. A pre-flight and post-flight checklist is contained with the UAS logbook and will be utilized for reference prior to each flight.
- d. Any physical equipment issue that cannot be resolved on-site, and which have an impact on safety or the mission, will override the deployment.
- e. Prior to flight, the UAS should have a functioning locator device attached along with any required lighting.

Weather

- a. Before each deployment, the leader/observer will ensure that he/she gathers enough information to make themselves familiar with the weather situation existing throughout the area of deployment. The Leader shall utilize FAA approved weather resources to obtain the latest and most current weather conditions.
- b. An anemometer should be utilized if conditions warrant in order to better estimate the wind speed and determine if it is within the capabilities of the airframe being flown.
- c. Leader/Observer should use the Beaufort scale when making deployment decisions in regards to wind conditions. An example of the Beaufort Scale is included below.
- d. The Leader shall ensure that the flight will occur within FAA VFR weather requirements.

Beaufort Wind Scale		
Beaufort Number (Force)	Wind Speed (mph)	Effects observed on land.
0	under 1	 <i>Chimney smoke rises straight up</i>
1	1-3	 <i>Smoke drifts gently</i>
2	4-7	 <i>Leaves rustle, wind felt on face</i>
3	8-12	 <i>Leaves & twigs on trees move</i>
4	13-18	 <i>Dust & paper blow on the ground</i>
5	19-24	 <i>Small trees start to sway</i>

Documentation

- Weather will be documented prior to flight within the logbook.
- After each flight, the Leader will complete a statement documenting the UAS operation.
- After each deployment, all photos or video obtained for law enforcement will be submitted to evidence in accordance with that agency's policy.
- Aerial photography (still or video) shall be stored in accordance with current department policy.
- The Leader of the UAS is responsible for evidence handling as well as writing any supporting documentation for the incident.

Planning

- The leader/observer shall familiarize themselves with all available information concerning the deployment including, but not limited to, the weather conditions, hazards, description of the incident, deployment goals, etc.
- The Team will ensure that the location for take-off and emergency landing is adequate for a safe deployment.
 - The take-off/landing location should be clearly marked and identifiable with electric devices and/or short cones.
 - The LZ will be minimum of 20 feet by 20 feet with no overhead obstructions and well away from anything that could cause interference such as power plant, cell towers, etc.
 - At least one emergency landing area should be identified within the mission area prior to deployment.
 - The Team 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.

Checklists

- a) The Team shall utilize pertinent checklists to ensure the highest level of safety for deployment.

Maintenance

- a) Although there are few parts on the UAS that need servicing, it is necessary that the manufacturer's maintenance schedule be followed and properly documented.
- b) Any issues that arise during maintenance that cannot be resolved by routine methods shall be forwarded to the manufacturer for further technical support.

Other

- a) The UAS Team will ensure that no items are attached to the UAS prior to flight that are not required for safe operation and to complete the mission goal.

Law Enforcement Operations

Law enforcement operations are governed by New Mexico Statutes. Use of a UAS is allowed for the following missions:

- a) To counter a high risk of a terrorist attack by a specific individual or organization if the Secretary of Homeland Security or the Secretary of the N.M. Department of Public Safety determines that credible intelligence indicates that the risk exists.
- b) To conduct surveillance in an area that is within a law enforcement officer's plain view when the officer is in a location he or she has a legal right to be.
- c) If the law enforcement agency first obtains a search warrant authorizing the use of a UAS.
- d) If the law enforcement agency possesses reasonable suspicion that, under particular circumstances, swift action is needed to prevent imminent danger to life or serious damage to property, to prevent the imminent escape of a suspect or the destruction of evidence, to pursue an escapee or suspect, or to facilitate the search for a missing person.
- e) To photograph gatherings to which the public is invited on public or private land.

ADMINISTRATION

Safety

- Los Alamos County Fire Department is committed to having a safe and healthy workplace, including:
 - The ongoing pursuit of an accident free workplace, including no harm to people, no damage to equipment, the environment and property.
 - 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.
 - Support for safety training and awareness programs.
 - Conducting regular audits of safety policies, procedures and practices.
 - Monitoring the UAS community to ensure best safety practices are incorporated into the organization.
- It is the duty of every member within the UAS Team to contribute to the goal of continued safe operations. This contribution may come in many forms and includes always operating in the safest

manner practicable and *"never taking unnecessary risks*. Safety hazards, whether procedural, operational or maintenance related should be identified as soon as possible after, if not before, an incident occurs, any suggestions in the interest of safety should be made to the UAS Team Chain of Command.

- If any member observes, or has knowledge, of an unsafe or dangerous act committed by another member, the Chief and department Safety Officer is to be notified immediately so that corrective action may be taken.

Incident Investigations and Hazard Report

Accident reporting and review provide a mechanism to report accidents and take correct actions to the UAS program.

- Any accident or incident involving UAS operations will follow current accident reporting policies of the department.
- The UAS Coordinator will report any accident to the FAA within 10 days if it results in serious injury to any person or any loss of consciousness, or it causes damage to any property (other than the UAS) in excess of \$500 to repair or replace the property (whichever is lower).
- Accidents requiring FAA reporting will be done through the portal at <http://www.faa.gov/uas>.
- A hazard is something that has potential to cause harm. The systematic identification and control of all hazards associated with UAS operations is a foundation to the programs safety.
- Hazards noted during a UAS operation, real or perceived, will be reported as soon as possible to the UAS Coordinator for investigation.
- A written memorandum fully explaining the problem (hazard) will be given to the UAS Coordinator.
- Every hazard will be investigated, with the results and corrective action taken communicated to all members.
- The investigation of the hazard will include a representative of the department reporting the hazard, and another person who has the technical skills necessary. In some cases, this may include an independent subject matter expert to help assure a thorough and complete investigation is done.
- Hazards requiring immediate attention will be brought to the attention of the UAS Leader immediately. This may result in the termination of the current mission or further UAS missions until the hazard can be resolved.
- **ALL MEMBERS ARE AUTHORIZED TO TAKE ACTION TO CORRECT A HAZARD** if, in that member's opinion will result in an injury. The UAS Team chain of command will be immediately notified in such situations.

Operations Manual

- The policies and procedures contained within this manual are issued by authority of the Chief. As such, it is an official document of Los Alamos County Fire Department
- The manual is not intended to be all-inclusive, but as a supplement to other department guidelines, FAA regulations, aircraft manufacturers' approved flight manual, etc....
- This manual has been written to address UAS operations, as they existed when it was drafted. Equipment, personnel, environmental (internal/external) etc....change over time. The management of change involves a systematic approach to monitoring an organizations change and is critical part of the risk management process. Given this, it is essential that this manual be continually updated as necessary. The entire manual will 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.

- A copy of the manual (electronic/paper) will be issued to every person having UAS responsibilities.

Training

Instructors

1. If any members are FAA certified flight instructors, they will be given instructor duties. Such duties can include developing training courses; provide training and student evaluation and documentation.
2. Duties of instructing new members shall fall upon those who have the most flight time and knowledge of UAS operations. Instructors will be designated by those within the Team and approved by the UAS Coordinator (Chief).

Training Plans

1. All members will have a training plan on file that outlines training objectives. This file will reside in the individual member's department training folder.
2. The approved training plan will be developed jointly by the UAS members and individual department's training committee followed by approval of the Chief.
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.

Scheduled Training

1. Training prioritization:
 - a. All missions will supersede training.
 - b. All training requests will supersede demonstrations.
 - c. Training is based on a first come basis.
 - d. At times situations may arise where circumstances dictate a need for a specific training on a specific date or to supplement a mission request. If this is in conflict with a previous training request, the requesting entity will submit a detailed request for evaluation to the Chief or their designee.

Initial Training

1. Members shall possess a FAA Remote Pilot's Certification.
2. Observers must have completed sufficient training to communicate to the pilot any instructions required to remain clear of conflicting traffic. This training should include knowledge of the rules and responsibilities described in:
 - 14 CFR 91.111, *Operating Near Other Aircraft*.
 - 14 CFR 91.113, *Right-of-Way Rules: Except Water Operations*.
 - 14CFR 91.155, *Basic VFR Weather Minimums*.
 - Knowledge of air traffic and radio communications, including the use of approved ATC/pilot phraseology.
 - Knowledge of appropriate sections of the *Aeronautical Information Manual*.
 - *Pass an in-house knowledge test*.
3. In conjunction with fulfilling all FAA requirements for operator/observer duties, the new member will also become familiar with the departments UAS operations, the aircraft and its equipment.
4. Complete the FAA ALC-451 online course.

5. Any new member who fails to successfully complete the initial training may be denied as a member of the UAS Team.
6. Before a member can fly as a Leader, they must complete at least 8 hours of flight training with the UAS instructors to show proficiency of the flight training exercises and the airframe.
7. Initial UAS flight training and familiarization may be provided by the vendor.
8. All leaders/observers shall have completed basic incident command system training.
9. Those not having a UAS pilot certificate may fly under another person having a Part 107 license at that pilot's discretion or through a valid COA.

Recurrent Training

1. All members within the Team shall maintain proficiency in their abilities. Members who do not have any documented training or flight time within a span of 90 days will have to show proficiency before a deployment or exercise.
2. Recurrent training is not limited to actual operating skills but includes knowledge of all pertinent UAS/aviation matters, equipment usage and abilities, mapping, and most importantly have general knowledge of the type of mission. The deployment of a UAS for a mission goes far beyond having the ability to fly. If the Team is not familiar with the mission such as a HAZMAT incident they will likely miss important visual information that would be beneficial to the IC and goals of the mission.
3. Failure to prove proficiency can result in removal from UAS responsibilities.
4. Team training as a whole will occur at least quarterly.

Miscellaneous

1. Depending on the nature of the training request, all efforts will be made to accommodate the hours of training so as little impact as possible is made to staffing levels.
2. All requests for training shall be approved through the member's chain of command.
3. Members are encouraged to attend, and forward information on FAA sponsored safety seminars.
4. Unless approval is obtained in writing in advance, overtime will not be authorized for training.
5. Training shall only be conducted at approved locations and follow Departmental Guidelines.

Checklists

Environment

	Check for people, animals, property in the flight vicinity
	Notify by-standers or nearby property owners of your intentions
	Discuss flight plan with Team members
	Notify ATC of operations if needed

UAS/Equipment

	Aircraft (AC) and Remote Controller (RC) batteries fully charged
	Tablet or other device fully charged
	Portable Radio for communications fully charged
	Ensure SD card has free space and is inserted into the camera
	Ensure Firmware is updated on AC and RC(s)
	Cache location maps into all DJI Pilot app devices
	Check for frequency (FX) used by other manned AC if needed
	Check if flight location is in No-Fly Zone (Check: Airmap, B4UFly, or similar)
	Check for NOTAMs and Temporary Flight Restrictions (TFRs) (FAA.gov/notamSearch)
	Antennas oriented Properly <i>Note: The broad side should face the AC and they should not touch each other.</i>
	Tracking device charged, attached firmly, and active

Flights Operations

	Operations will be below 400 ft. AGL
	Operations will be with visual line of sight (no visual aids) unless under COA
	Operations will not be over large groups of people, stadiums, sports events
	Operations will not take place within 5 miles of an airport w/o contacting air traffic control
	Operations will not be near other aircraft
	Operational area is free of overhead obstructions
	Wires, low-flying AC, trees, tall buildings
	Weather meets conditions <ul style="list-style-type: none">• Winds under 19.4kts (22 mph)• Clouds above 500'• Visibility for 3 statute mile minimum
	Confirm flight plan with Team members

Physical Aircraft Check

	Desired filter attached to camera
	Camera locked in place
	SD card in camera
	Motors clear of Foreign Object Debris (FOD) <i>Note: FOD may cause motor burnout and complete AC inversion on take-off</i>
	Check propellers for any melting or cracks
	Propellers hand tight or locked in
	Prop arms locked
	Landing gear secured

DJI Pilot App Check

	Maximum Flight altitude set <i>Note: 121 Meters = 400'</i>
	Failsafe Mode, Set for 10M Clearance above highest obstacle in flight plan <i>Note: 1 Meter = 3.3'</i>
	RC Signal Lost set to Return-to-Home
	Image Transmission Channel set <i>Note: Watch channels for 30 seconds to ensure selected channel is indeed stable</i>
	Battery Cells all 4.28V or greater At least 98% battery Ensure no greater than .2V between battery cells
	Adjust Gimbal Roll to make level
	Ensure enough Satellites are locked (recommend 8)
	Set Camera Orientation mode <i>Note: Recommend "Follow-mode" for solo and "free-mode" with camera</i>
	Turn all devices to airplane mode for Matrice only, Phantom requires WiFi
	Start Propellers using a Combined Stick Command (CSC)
	While idling check for vibrations, lights activated, and gimbal camera functions
	Ensure blue dot representing RC is accurately located on map
	Ensure home point is accurately set on map
	Ensure elevation reads 0 (zero)
	Start Log

DRAFT

Los Alamos Police Dept. Policy (DRAFT 6/7/18)

Title: Unmanned Aerial Systems (UAS) Use

PURPOSE

The purpose of this policy is to establish a procedure and framework for the safe, legal, and effective use of Unmanned Aerial Systems (UAS).

DEFINITIONS

- UAS: Unmanned aerial systems also referred to as “Unmanned Aerial Vehicle(s)” and/or “UAVs” and/or “Drone” and/or “UAS”
- VO: Visual Observer; the crew member dedicated to maintaining a visual line of sight on the UAS during any mission and assist with seeing and avoiding other air traffic or objects aloft or on the ground.
- PIC: Remote Pilot in Command; the crew member who is solely responsible for the operation of a UAS during its mission and also is ultimately responsible for its operation and safety during flight.
- Aerial Imaging: The activity of electronically capturing images (including but not limited to still pictures, video, and thermal images) from a UAS and storing them on a memory device.
- PART107: Certification issued by the FAA for a UAS operator.
- Person Manipulating the Controls: A person who is controlling a UAS under the direct supervision of a remote pilot in command.
- Crew Member: A person assigned to perform an operational duty during operations. A UAS crew member includes the remote pilot in command, person manipulating the controls, and visual observers, but may include other people as appropriate or require to ensure safe operation of aircraft.

POLICY

UAS USAGE:

The Chief of Police or designee must authorize the deployment of UAS.

The UAS shall never be used to conduct unauthorized surveillance and the privacy of citizens will be considered before each deployment.

Acceptable uses for a UAS shall include, but are not limited to:

- Observing crime scenes
- Fleeing fugitive apprehension operations
- Storm damage assessments
- Hostage/standoff operations and TACT Team deployments
- Serious Traffic crash investigation incidents
- Search and rescue operations
- Training activities
- Public relation events
- Mutual aid requests (including but not limited to fire, police and other emergency service incidents)
- Other events/activities expressly approved by the Chief of Police or their designee

TRAINING

- The PIC will attend a designated training program.
- PIC will be trained in the operation of the UAS per the manufacture operating guidelines, weather considerations and flight characteristics, pre and post flight care of the UAS, and standard deployment situations (search and rescue, serious traffic crash scenes, etc.).
- The PIC will successfully complete the FAA Part 107 certification test following the completion of the designated training program.
- The PIC will complete AT LEAST a quarterly basic flight proficiency practical exercise (i.e. 3 take off and landings, ascend/descend to 200' AGL, and basic flight maneuvers). All flight proficiencies will be logged in the basic flight proficiency log.
- The PIC and support crew will attend an annual training covering updated industry standards, field exercises, review of regulations, and maintenance requirements.
- Annual evaluation standards and recommended/example tasks – see Attachment 2 and 3

CONDITIONS OF USAGE:

- All missions when reasonable will be supported by (2) dedicated crew members, the PIC and the VO
- Only Department owned UAS or specifically contracted equipment by the Department will be utilized.
- Crew members will be Department members who have been properly trained and approved for the operation of the UAS.
- UAS flight operations will not exceed an altitude of 400' AGL (above ground level) and will be within the unassisted vision of the VO at all times.

- All flight operations will be logged in CAD to minimally include time, date, location and purpose of operations and crew members.
- The PIC should make proper notification, to include the Los Alamos County Airport, of operation location, planned altitude of the mission, and anticipated duration of the mission.

SAFETY OF OPERATIONS:

- Safety is the primary and paramount concern in all UAS operations. The Chief of Police or their designee has ultimate authority to suspend, terminate or delay any and all UAS flight operations. Additionally, the PIC has complete authority to decline a proposed, or suspend an active, mission, or portion thereof, for any reason.
- All flight operations will be suspended or halted when manned flight efforts are active in the area (e.g. medical evacuation flights). Manned flight operations always have priority.
- Except as required by the mission, only crew members will be in the vicinity of the UAS during takeoff and landing operations.
- Flight operations will be done in accordance of safety procedures that ensure the safe operation of the UAS and the safety of those in the area of the operation.
- The UAS unit Commander will conduct an annual policy review with Police Administrative staff.
- The UAS unit Commander will conduct an annual review to determine the needs and applicability of a Certificate of Waiver or Authorization (COA).

CAPTURED IMAGE/VIDEO RETENTION DOCUMENTATION AND CONSIDERATIONS:

- All due care will be used in all aerial imaging operations to ensure privacy of private parties, and minimization of incidentally recorded images not relevant to the approved usage of the UAS.
- Any retained images/video will be subject to the governing policies of the sponsoring organization. When assisting other sponsoring organizations the PIC will give a copy of the image/video to that organization for their record keeping per their policy. The PIC will retain the flight data image/video's captured for 30 days before removal, EXCEPT when the flight data image/videos are deemed evidentiary. The PIC will also complete report to document the date, time, location, purpose of flight, and any other relevant information reference the flight operations of that mission. The image/video's that are deemed evidentiary shall be submitted to the Property Room and/or stored on the designated storage device.
- The PIC is responsible for completing all applicable mission log information and for ensuring appropriate disposition of any captured images, recordings and/or data.

- Any media deemed non-evidentiary will be maintained for 30 days on the designated storage device before removal.
- The PIC will complete a supplement to the corresponding report, and complete an evidence voucher for the submitted media if the physical storage of the media is within the Los Alamos Police Department Property Room.
- All public records requests of images/video captured from the UAS, will be released in accordance with applicable law and policy.
- The UAS unit Commander will conduct an annual audit for both captured image/video and flight logs to ensure proper retention of video/image and flight protocols are being met per this policy.
- Any image/video's that are captured from an assisting law enforcement agency and deemed evidentiary will be considered the property of the Los Alamos Police Department and shall be submitted to the Property Room and/or stored on the designated storage device according to the aforementioned storage and documentation processes contained in this section.

NORMAL OPERATIONS:

- PRE-FLIGHT PROCEDURES
 - 1) Prior to any mission operation, crew members will ensure a complete pre-flight inspection is performed in accordance with the manufacturer's recommendation and any applicable Federal Aviation Restrictions (FARs).
 - 2) An appropriate takeoff/landing zone will be designated and identified so as to keep it clear of obstructions during mission operations.
- COMMUNICATIONS
 - 1) Communication between crew members during mission operations will be limited to those operationally necessary in order to minimize disruptions and to ensure the safety of operations.
- FLIGHT OPERATIONS
 - 1) All UAS will be operated in accordance with manufacturer specifications.
 - 2) For all missions, a VO will be positioned so as to be able to maintain a continuous and unobstructed line of sight on the UAS and remain in communication with the PIC.
 - 3) The UAS will be commanded to return to its dedicated landing zone when the UAS battery level has reached 20% remaining charge. The PIC may establish a higher level if they determine mission parameters and conditions warrant it.

- POST FLIGHT PROCEDURES

- 1) Upon the completion of any mission operation, crew members will ensure a complete post-flight inspection (e.g. damage) is performed in accordance with the manufacturer's recommendation and any applicable FARs.
- 2) If any malfunction or damage occurs to the UAS, a Chiefs report of the incident will be completed and notification will be made noting the UAS will be out of service until it is airworthy again.

EMERGENCY PROCEDURES:

Emergency Procedures stated in the manufacturer's operations manual shall be complied with in all operations.

- LOSS OF FLIGHT CONTROL (Lost Link):

- 1) Prior to flight operations, UAS settings will be set such that in the event of a lost link, the UAS will climb to a safe altitude and return and land at, or near, its launch site.

- LOSS OF VISUAL CONTACT:

- 1) In the event the VO loses visual contact with the UAS, the PIC shall hover the aircraft while the VO attempts to re-establish visual contact. If that is not accomplished in a reasonable time, as determined by the PIC, then the "Lost Link" procedure will be executed.

- LOSS OF GPS SIGNAL:

- 1) If the UAS loses GPS signal during mission operations, the PIC will land as soon as practicable, if the PIC has difficulty controlling the flight of the aircraft.

County Manager Approval/Date

Dept. Approval: _____ Date: _____

Traffic Division Policy (DRAFT 6/5/18)

Title: Unmanned Aerial Systems (UAS) Use by Traffic Staff

1. Purpose

The purpose of this policy is to insure the Traffic Management Division ("Traffic") complies with all federal, state and local legal requirements related to the use of unmanned aircraft systems (UAS) by Traffic Employees. The division shall further comply with the County Manager's Policy governing the use of UAS and it is incorporated here by reference (Policy 0290).

Within Traffic, trained employees shall employ the UAS solely for the purpose of:

- 1)
 - a) Mapping and for overhead photographs, primarily at or around intersections for the layout of new signals, signage or striping.
 - b) Working with Parks, and / or Open Space for layout of field activities or filming trails around the community.

2. Employee Use

The UAV flight shall only be performed by a Traffic Division employee who meets the training requirements set forth in the County Manager's Policy 0290.

3. Scheduling flights

The UAS will only be deployed after complying with the requirements set forth in the County Manager's policy. A log will be completed for Traffic tracking that outlines time, date, purpose, location, and name of the employee operating the UAS.

4. Process

Safe use is the primary priority and any use of the UAV must be approved in advance by the Traffic Division Manager. The County Manager's policy permits Traffic to operate the UAS

within a range of parameters in order to meet business use and purpose as described in (1) above. Traffic sets forth the additional policy for specific use for this purpose:

- All reasonable attempts will be made to avoid capture of footage from private property, particularly enclosed property (backyards, storage areas, behind private fences, etc.) unless given owner's permission
- The UAS shall not be flown over crowds
- The maximum sustained outdoor wind airspeed should be 10 MPH or less
- The UAS shall not be flown in adverse weather conditions

County Manager Approval/Date

Dept. Approval: _____ Date: _____
