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### **Appendix A**

Original Document Link Here

# Voluntary Best Practices for UAS Privacy, Transparency, and Accountability

Consensus, Stakeholder-Drafted
Best Practices Created
in the NTIA-Convened
Multistakeholder Process

May 18, 2016

"Unmanned Aircraft Systems (UAS) technology continues to improve rapidly, and increasingly UAS are able to perform a variety of missions with greater operational flexibility and at a lower cost than comparable manned aircraft. ...

-President Barack Obama

### Charge from the President

As compared to manned aircraft, UAS may provide lower-cost operation and augment existing capabilities while reducing risks to human life. Estimates suggest the positive economic impact to U.S. industry of the integration of UAS into the NAS could be substantial and likely will grow for the foreseeable future.

The combination of greater operational flexibility, lower capital requirements, and lower operating costs could allow UAS to be a transformative technology in the commercial and private sectors for fields as diverse as urban infrastructure management, farming, and disaster response. Although these opportunities will enhance American economic competitiveness, our Nation must be mindful of the potential implications for privacy, civil rights, and civil liberties. The Federal Government is committed to promoting the responsible use of this technology in a way that does not diminish rights and freedoms.

By the authority vested in me as President by the Constitution and the laws of the United States of America, and in order to establish transparent principles that ... promote the responsible use of this technology in the private and commercial sectors, it is hereby ordered as follows: ...

There is hereby established a multi-stakeholder engagement process to develop and communicate best practices for privacy, accountability, and transparency issues regarding commercial and private UAS use in the NAS. The process will include stakeholders from the private sector. Within 90 days of the date of this memorandum, the Department of Commerce, through the National Telecommunications and Information Administration, and in consultation with other interested agencies, will initiate this multi-stakeholder engagement process to develop a framework regarding privacy, accountability, and transparency for commercial and private UAS use."

President Barack Obama FEBRUARY 15, 2015

### Consensus, Stakeholder-Drafted Best Practices Created in the NTIA-Convened Multistakeholder Process

#### I. Introduction

The benefits of commercial and private unmanned aircraft systems (UAS) are substantial. Technology has moved forward rapidly, and what used to be considered toys are quickly becoming powerful commercial tools that can provide enormous benefits in terms of safety and efficiency. UAS integration will have a significant positive economic impact in the United States. Whether UAS are performing search and rescue missions, allowing farmers to be more efficient and environmentally friendly, inspecting power lines and cell towers, gathering news and enhancing the public's access to information, performing aerial photography to sell real estate and provide insurance services, surveying and mapping areas for public policy, delivering medicine to rural locations, providing wireless internet, enhancing construction site safety, or more—society is only just beginning to realize the full potential of UAS. UAS technology is already bringing substantial benefits to people's daily lives, including cheaper goods, innovative services, safer infrastructure, recreational uses, and greater economic activity. Inevitably, creative minds will devise many more UAS uses that will save lives, save money and make our society more productive.

However, the very characteristics that make UAS so promising for commercial and non-commercial uses, including their small size, maneuverability and capacity to carry various kinds of recording or sensory devices, can raise privacy concerns. As a result, individuals may be apprehensive about the adoption of this technology into everyday life. In order to ensure that UAS and the exciting possibilities that come with them live up to their full potential, operators should use this technology in a responsible, ethical, and respectful way. This should include a commitment to transparency, privacy and accountability.

The purpose of this document is to outline and describe voluntary Best Practices that UAS operators could take to

advance UAS privacy, transparency and accountability for the private and commercial use of UAS.¹UAS operators may implement these Best Practices in a variety of ways, depending on their circumstances and technology uses, and evolving privacy expectations. In some cases, these Best Practices are meant to go beyond existing law and they do not—and are not meant to—create a legal standard of care by which the activities of any particular UAS operator should be judged. These Best Practices are also not intended to serve as a template for future statutory or regulatory obligations, in part because doing so would make these standards mandatory (not voluntary) and could therefore raise First Amendment concerns.

<sup>1</sup> The National Telecommunications and Information Administration (NTIA) has convened a series of multi-stakeholder efforts as a way to increase privacy protections based upon the Administration's framework for consumer information privacy. On February 15, 2015, President Obama issued a Presidential Memorandum instructing NTIA to convene such a process to develop and communicate best practices for privacy, accountability, and transparency issues regarding commercial and private UAS use in the National Airspace System. These Voluntary Best Practices are the result of that multi-stakeholder engagement process.

### II. Applicability

These voluntary Best Practices for UAS focus on data collected via a UAS, which includes both commercial and non-commercial UAS. The only section applicable to newsgatherers and news reporting organizations is Section V considering that their activity is strongly protected by the First Amendment to the Constitution of the United States. There is also an Appendix entitled, "Guidelines for Neighborly Drone Use" that is intended to be a quick and easy reference guide for recreational UAS operators.

These Best Practices do not apply to data collected by other means—for instance, a company need not apply these Best Practices to data collected via the company's website. These Best Practices do not apply to the use of UAS for purposes of emergency response, including safety and rescue responses.

Nothing in these Best Practices shall:

- Be construed to limit or diminish freedoms guaranteed under the Constitution;
- Replace or take precedence over any local, state, or federal law or regulation;
- Take precedence over contractual obligations or the representations of entities contracting UAS operators. However, entities contracting UAS operators should consider these Best Practices when setting the terms of a contract for UAS use, and UAS operators should consider these Best Practices when choosing to accept a contract for UAS use; or

• Impede the safe operation of a UAS.

UAS operators should comply with all applicable laws and regulations. These Best Practices are intended to encourage positive conduct that complements legal compliance. Operators who are aware of other best practices that may apply specific guidance to technologies deployed on or through UAS should consider how to incorporate that guidance into their privacy and security policies and practices.

These Best Practices are also not intended to serve as a template for future statutory or regulatory obligations, in part because doing so would raise First Amendment issues.

#### **III. Definitions**

The term "consent" means words or conduct indicating permission. Consent must be informed and conduct indicating permission may be express or implied, depending on the context.

"Covered data" means information collected by a UAS that identifies a particular person. If data collected by UAS likely will not be linked to an individual's name or other personally identifiable information, or if the data is altered so that a specific person is not recognizable, it is not covered data.

The term "data subjects" refers to the individuals about whom covered data is collected.

The terms "where practicable" and "reasonable" depend largely on the circumstances of the UAS operator, the sensitivity of data collected, and the context associated with a particular UAS operation.

### **IV. Voluntary Best Practices**

These voluntary Best Practices for UAS focus on data collected via a UAS, which includes both commercial and non-commercial UAS. The only section applicable to newsgatherers and news reporting organizations is Section V considering that their activity is strongly protected by the First Amendment to the Constitution of the United States. There is also an Appendix entitled, "Guidelines for Neighborly Drone Use" that is intended to be a guick and easy reference guide for recreational UAS operators.

These Best Practices do not apply to data collected by other means—for instance, a company need not apply these Best Practices to data collected via the company's website. These Best Practices do not apply to the use of UAS for purposes of emergency response, including safety and rescue responses.

#### 1. Inform Others of Your Use of UAS

- 1(a) Where practicable, UAS operators should make a reasonable effort to provide prior notice to individuals of the gener-al timeframe and area that they may anticipate a UAS inten-tionally collecting covered data.<sup>2</sup>
- 1(b) When a UAS operator anticipates that UAS use may result in collection of covered data, the operator should provide a privacy policy for such data appropriate to the size and complexity of the operator, or incorporate such a policy into an existing privacy policy. The privacy policy should be in place no later than the time of collection and made publicly available. The policy should include, as practicable:
- (1) the purposes for which UAS will collect covered data;3
- (2) the kinds of covered data UAS will collect;

- (3) information regarding any data retention and deidentification practices;<sup>4</sup>
- (4) examples of the types of any entities with whom covered data will be shared;
- (5) information on how to submit privacy and security complaints or concerns; and
- (6) information describing practices in responding to law enforcement requests.

Material changes to the above should be incorporated into the privacy policy.

### 2. Show Care When Operating UAS or Collecting and Storing Covered Data

2(a) In the absence of a compelling need to do otherwise, or consent of the data subjects, UAS operators should avoid

- 2 What qualifies as a practicable and reasonable effort to provide prior notice will depend on operators' circumstances and the context of the UAS operation. For example, delivery UAS operators may provide customers with an estimated time of delivery. Real estate professionals using UAS may provide a home seller (and possibly immediate neighbors) with prior notice of the estimated date of UAS photography of the property. Hobbyist UAS operators may not need to notify nearby individuals of UAS flight in the vicinity.
- 3 These Best Practices recognize that UAS operators may not be able to predict all future uses of data. Accordingly, these Best Practices do not intend to discourage unplanned or innovative data uses that may result in desirable economic or societal benefits.
- 4 If it is not practicable to provide an exact retention period, because, for example, the retention period depends on legal hold requirements or evolving business operations, the UAS operator may explain that to data subjects when disclosing its retention policies.

- using UAS for the specific purpose of intentionally collecting cov-ered data where the operator knows the data subject has a reasonable expectation of privacy.
- 2(b) In the absence of a compelling need to do otherwise, or consent of the data subjects, UAS operators should avoid using UAS for the specific purpose of persistent and continuous collection of covered data about individuals.
- 2(c) Where it will not impede the purpose for which the UAS is used or conflict with FAA guidelines, UAS operators should make a reasonable effort to minimize UAS operations over or within private property without consent of the property owner or without appropriate legal authority.
- 2(d) UAS operators should make a reasonable effort to avoid knowingly retaining covered data longer than reasonably necessary to fulfill a purpose as outlined in § IV.1(b). With the consent of the data subject, or in exceptional circumstances (such as legal disputes or safety incidents), such data may be held for a longer period.
- 2(e) UAS operators should establish a process, appropriate to the size and complexity of the operator, for receiving privacy or security concerns, including requests to delete, de-identi-fy, or obfuscate the data subject's covered data. Commercial operators should make this process easily accessible to the public, such as by placing points of contact on a company website.<sup>5</sup>

#### 3. Limit the Use and Sharing of Covered Data

- 3(a) UAS operators should not use covered data for the following purposes without consent: employment eligibility, promotion, or retention; credit eligibility; or health care treatment eligi-bility other than when expressly permitted by and subject to the requirements of a sector-specific regulatory framework.
- 3(b) UAS operators should make a reasonable effort to avoid using or sharing covered data for any purpose that is not included in the privacy policy covering UAS data.
- 3(c) If publicly disclosing covered data is not necessary to fulfill the purpose for which the UAS is used, UAS operators should avoid knowingly publicly disclosing data collected via UAS until the operator has undertaken a reasonable effort to obfuscate or de-identify covered data —unless the data subjects provide consent to the disclosure.

3(d) UAS operators should make a reasonable effort to avoid us-ing or sharing covered data for marketing purposes unless the data subject provides consent to the use or disclosure. There is no restriction on the use or sharing of aggregat-ed covered data as an input (e.g., statistical information) for broader marketing campaigns.

#### 4. Secure Covered Data

4(a) UAS operators should take measures to manage security risks of covered data by implementing a program that contains reasonable administrative, technical, and physical safe-guards appropriate to the operator's size and complexity, the nature and scope of its activities, and the sensitivity of the covered data.

Examples of appropriate administrative, technical, and physical safeguards include those described in guidance from the Federal Trade Commission, the National Institute of Standards and Technology (NIST) Cybersecurity Framework, and the Interna-tional Organization for Standardization's 27001 standard for in-formation security management.

For example, UAS operators engaging in commercial activity should consider taking the following actions to secure covered data:

- Having a written security policy with respect to the collection, use, storage, and dissemination of covered data appropriate to the size and complexity of the operator and the sensitivity of the data collected and retained.<sup>6</sup>
- Making a reasonable effort to regularly monitor systems for breach and data security risks.
- Making a reasonable effort to provide security training to employees with access to covered data.
- Making a reasonable effort to permit only authorized individuals to access covered data.

### 5. Monitor and Comply with Evolving Federal, State, and Local UAS Laws

5(a) UAS operators should ensure compliance with evolving applicable laws and regulations and UAS operators' own privacy and security policies through appropriate internal processes.

<sup>5</sup> This may be as simple as talking to an individual who approaches the UAS operator with a concern.

<sup>6</sup> As with the privacy policy referenced in § IV.1(b), UAS operators may modify a broader existing security policy to incorporate data collected via UAS. A security policy should include, at minimum, such basic steps as keeping software up to date and downloading security patches for known vulnerabilities.

## V. Best Practices for Newsgatherers and News Reporting Organizations

Newsgathering and news reporting are strongly protected by United States law, including the First Amendment to the Constitution. The public relies on an independent press to gather and report the news and ensure an informed public.

For this reason, these Best Practices do not apply to newsgatherers and news reporting organizations. Newsgatherers and news reporting organizations may use UAS in the same manner as any other comparable technology to capture, store, retain and use data or images in public spaces. Newsgatherers and news reporting organizations should operate under the ethics rules and standards of their organization, and according to existing federal and state laws.

### **Appendix**

### Guidelines for Neighborly Drone Use

Drones are useful. New, fairly cheap drones are easy to use. But just because they are cheap and simple to fly doesn't mean the pictures and video they take can't harm other people. The FAA and partner organizations have put safety guidance online at <a href="http://knowbeforeyoufly.org">http://knowbeforeyoufly.org</a>. But even safe flight might not respect other people's privacy. These are voluntary guidelines. No one is forcing you to obey them. Privacy is hard to define, but it is important. There is a balance between your rights as a drone user and other people's rights to privacy. That balance isn't easy to find. You should follow the detailed "UAS Privacy Best Practices", on which these guidelines are based, especially if you fly drones often, or use them commercially. The overarching principle should be peaceful issue resolution.

- 1. If you can, tell other people you'll be taking pictures or video of them before you do.
- 2. If you think someone has a reasonable expectation of privacy, don't violate that privacy by taking pictures, video, or otherwise gathering sensitive data, unless you've got a very good reason.
- 3. Don't fly over other people's private property without permission if you can easily avoid doing so.
- 4. Don't gather personal data for no reason, and don't keep it for longer than you think you have to.

- 5. If you keep sensitive data about other people, secure it against loss or theft.
- 6. If someone asks you to delete personal data about him or her that you've gathered, do so, unless you've got a good reason not to.
- 7. If anyone raises privacy, security, or safety concerns with you, try and listen to what they have to say, as long as they're polite and reasonable about it.
- 8. Don't harass people with your drone.

### **Supporters**

As of June 2016

Amazon

Association for Unmanned Vehicle Systems International (AUVSI)

Center for Democracy and Technology

Commercial Drone Alliance

Consumer Technology Association

CTIA

Digital Content Next (DCN)

**Future of Privacy Forum** 

Intel

National Association of Broadcasters (NAB)

New America's Open Technology Institute

News Media Coalition

Newspaper Association of America (NAA)

NetChoice

Online Trust Alliance (OTA)

PrecisionHawk

Radio Television Digital News Association (RTDNA)

Small UAV Coalition

Software & Information Industry Association (SIIA)

U.S. Chamber of Commerce

X (Formerly Google [x])

To add your organization to the list of supporters, please email drones@fpf.org

"As the President recognized when he directed NTIA to convene this process, these best practices can help promote Commerce priorities by allowing the industry to grow, develop and innovate while helping to build consumer trust."

- U.S. Secretary of Commerce Penny Pritzker

"The best practices agreed to by a diverse group of stakeholders—including privacy and consumer advocates, industry, news organizations and trade associations—represent an important step in building consumer trust, giving users the tools to innovate in this space in a manner that respects privacy, and providing accountability and transparency."

NTIA Deputy Assistant Secretary Angela Simpson

The best practices were developed by a group of stakeholders convened by the National Telecommunications and Information Administration.

This is not a government publication.

More information about the NTIA process is available at www.ntia.doc.gov. An easy to read summary of the best practices is available at www.fpf.org

### **Appendix B**

### The UAS Program Minimum Cost-Benefit Analysis Model Form UAS Program/Device Cost Benefit Analysis

| Date   |   |  |                         |
|--|---|--|-------------------------|
|  | ition   |  |                         |
|  | ct/Requester  |  |                         |
|  |   | to an existing program?  |                         |
| Approved _   | Denied  |  |                         |
| Authorizing Signature  |   | Dat  | e                       |
| this product is needed Goals & Objectives                                | s objectives and outcome<br>d. Describe your requiren   | es desired. Fully describe t<br>nents for the product/serv                               | vice.]                  |
| <u>Current Solution</u>  | ives are identified that w<br>s needs currently being m | ill meet the business need net?]   | 12]                     |
| What options are avai<br>[Describe viable optio<br>performed to identify | ns, including risks and be                              | enefits of each. Describe tl   | he market research you  |
| initial procurement co   | osts, ongoing operational                               | usiness need; this should in<br>costs for [X] years, saving<br>o manage a solution and s | gs opportunities, risks |

- Option 1 (May be current method of operations)
  - o List all costs or verifiable estimate of total costs
  - o Risks
  - Benefits
- Option 2
  - List all costs or verifiable estimate of total costs
  - o Risks
  - Benefits

### **Appendix C**

| Pre-Flight Checklist |   |   |   |         |  |  |  |  |
|----------------------|---|---|---|---------|--|--|--|--|
| Pilot                | In Command:   | mmand: FAA Reg. No.: Date:                                |   |         |  |  |  |  |
| Obse                 | erver (Optional):   | Location:   |   |         |  |  |  |  |
| UAS Model:           |   |   |   |         |  |  |  |  |
| DJI Phantom 3 Pro    |   |   |   |         |  |  |  |  |
| NOTES                | Purpose of Flight (check 1): Recreation Commercial (1) SAR(2) Other (Describe):  NOTES: (1) - Commercial sUAS license required (2) – Authorization by applicable authority required |   |   |         |  |  |  |  |
| Auth                 | orization for flight in restri  | cted airspace: (Required for flight in restr              | icted airspace only, otherwise NA)                      |         |  |  |  |  |
| Auth                 | orized by:  |   | Title:  |         |  |  |  |  |
| A. P                 | re-Start Checklist  |   |   |         |  |  |  |  |
| Ir                   | nportant: Complete all check list iten<br>problem before continuing   | ns in the order they are presented. If you cannot ch      | neck off an item <b>STOP!</b> and corre                 | ect the |  |  |  |  |
| No.                  | ltem  | Acceptable Cond   | dition  | Sat.    |  |  |  |  |
| 1                    | A:  | Unrestricted airspace or flight author                    |   |         |  |  |  |  |
| 1                    | Airspace  | Potential obstructions near intende                       | d flight path identified                                |         |  |  |  |  |
| 2                    | Weather   | Visibility >=3 miles/500 ft., Wind <=                     | /isibility >=3 miles/500 ft., Wind <=15mph, Precip None |         |  |  |  |  |
| 3                    | sUAS Airframe/Props   | No structural defects visible                             |   |         |  |  |  |  |
| 4                    | sUAS Battery  | Sufficient for intended flight, not les                   | ss than 75%   |         |  |  |  |  |
| 5                    | Controller Battery  | Sufficient for intended flight, not les                   | ss than 75%   |         |  |  |  |  |
| 6                    | Display Device Battery  | Sufficient for intended flight                            |   |         |  |  |  |  |
| 7                    | Memory Card   | Installed, sufficient memory space a                      | vailable for flight                                     |         |  |  |  |  |
| 8                    | Observer  | Present, briefed and ready (Only if desi                  | gnated, otherwise NA)                                   |         |  |  |  |  |
| 9                    | Camera Gimbal Lock  | Removed   |   |         |  |  |  |  |
| 10                   | Display Device  | On  |   |         |  |  |  |  |
| 11                   | Controller Power  | On  |   |         |  |  |  |  |
| 12                   | sUAS Power  | On  |   |         |  |  |  |  |
| 13                   | sUAS Status Lights  | Flashing GREEN  |   |         |  |  |  |  |
| 14                   | Camera Check  | FPV camera view normal                                    |   |         |  |  |  |  |
| 15                   | Compass Calibration   | Compass calibrated for current location                   |   |         |  |  |  |  |
| 16                   | Flight Limits Set   | Alt. <=120 meters, Dist. <=500 meters                     |   |         |  |  |  |  |
| 17                   | Flight Mode Set to GPS  | Controller mode switch in "P", display status GREEN - RTF |   |         |  |  |  |  |
| 18                   | Take-Off Location   | Clear for >=25ft. radius, no overhea                      | d obstructions  |         |  |  |  |  |
|                      | lotor Start Checklist   |   |   |         |  |  |  |  |
| No.                  | Item  | Acceptable Cond   |   | Sat     |  |  |  |  |
| 1                    | sUAS Motor Start  | sUAS motors start and run at idle, n                      | o abnormal noise  |         |  |  |  |  |
| 2                    | Home Point  | Home Point Set  |   |         |  |  |  |  |
| 3                    | Hover Check   | Flight and Camera Gimbal control re                       | esponses normal   |         |  |  |  |  |
| 4                    | Flight Telemetry  | Telemetry normal (Bat, Alt, Dist., etc.)                  |   |         |  |  |  |  |
|                      |   | READY FOR FLIGI   | нт  |         |  |  |  |  |

| INI | otes: |  |
|-----|-------|--|
|     | otes. |  |

### **Flight Operations**

The following information obtained from, Know Before You Fly, (Web Site: <a href="knowbeforeyoufly.org">knowbeforeyoufly.org</a>) is not a checklist but rather a list of guidelines that should be followed by the pilot in command during flight. The pilot in command should be sufficiently familiar with these guidelines to implement them during flight without referring to this document.

- Follow community-based safety guidelines, as developed by organizations such asthe Academy of Model Aeronautics (AMA).
- Fly no higher than 400 feet and remain below any surrounding obstacles when possible.
- Keep your sUAS in eyesight at all times, and use an observer to assist if needed.
- Remain well clear of and do not interfere with manned aircraft operations, and you must ee and avoid other aircraft and obstacles at all times.
- Do not intentionally fly over unprotected persons or moving vehicles, and remain at least25 feet away from individuals and vulnerable property.
- Contact the airport or control tower before flying within five miles of an airport.
- Fly no closer than two nautical miles from a heliport with a published instrument flightprocedure.
- Do not fly in adverse weather conditions such as in high winds or reduced visibility.
- Do not fly under the influence of alcohol or drugs.
- Ensure the operating environment is safe and that the operator is competent and proficient in the operation of the sUAS.
- Do not fly near or over sensitive infrastructure or property such as power stations, watertreatment facilities, correctional facilities, heavily traveled roadways, government facilities, etc.
- Check and follow all local laws and ordinances before flying over private property.
- Do not conduct surveillance or photograph persons in areas where there is an expectation of privacy without the individual's permission (see AMA's privacy policy).

Users of commercial and recreational UAS should be aware that in remote, rural and agricultural areas, manned aircraft, including fixed-wing aircraft and helicopters, may be operating very closeto ground level. Pilots conducting agricultural, firefighting, law enforcement, emergency medical, wildlife survey operations and a variety of other services all legally and routinely work in low-level airspace. Operators controlling UAS in these areas should maintain situational awareness, give way to, and remain a safe distance from these low-level, manned airplanes and helicopters.

| <b>Notes:</b> |                      |  |     |
|---------------|----------------------|--|-----|
|               |                      |  |     |
|               |                      |  |     |
|               | Landii               | ng/Post Flight Check List                                  |     |
| A. Landing C  | hecklist             |  |     |
| No.           | Item                 | Acceptable Condition                                       | Sat |
| 1             | Landing Location     | Clear for >=25ft. radius, no overhead obstructions         |     |
| B. Post-Fligh | t Checklist          |  |     |
| No.           | Item                 | Acceptable Condition                                       | Sat |
| 1             | sUAS Power           | Off  |     |
| 2             | Controller Power     | Off  |     |
| 3             | Display Device Power | Off  |     |
| 4             | Camera Gimbal Lock   | Installed  |     |
| 5             | Memory Card          | Removed if image download desired. If flying in support of |     |
|               |                      | an incident response or SAR effort, ensure imagery is      |     |
|               |                      | presented to the designated individual.                    |     |
| Notes:        |                      |  |     |
|               |                      |  |     |
|               |                      |  |     |
|               |                      |  |     |
|               |                      |  |     |
|               |                      |  |     |

### **Appendix D**

### **Aircraft Maintenance Log**

| Aircraft Name              | Manufacturer Make                   |
|----------------------------|-------------------------------------|
| FAA Registration Number    | Manufacturer Model                  |
| Month and Year of Purchase | Manufacturer Serial Number          |
| Date of Repair or          | Purchased Index (AASO, MREDI, etc.) |
| Maintenance                |                                     |

| Date | Maintenance/Repair<br>Description | Maintenance/Repair<br>Performed by: | Date of<br>Airworthiness<br>Check | Airworthiness<br>Performed<br>by: | Repair (R) or<br>Maintenance<br>(M) | Remarks |
|------|-----------------------------------|-------------------------------------|-----------------------------------|-----------------------------------|-------------------------------------|---------|
|      |                                   |                                     |                                   |                                   |                                     |         |
|      |                                   |                                     |                                   |                                   |                                     |         |
|      |                                   |                                     |                                   |                                   |                                     |         |
|      |                                   |                                     |                                   |                                   |                                     |         |
|      |                                   |                                     |                                   |                                   |                                     |         |
|      |                                   |                                     |                                   |                                   |                                     |         |
|      |                                   |                                     |                                   |                                   |                                     |         |
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|      |                                   |                                     |                                   |                                   |                                     |         |
|      |                                   |                                     |                                   |                                   |                                     |         |
|      |                                   |                                     |                                   |                                   |                                     |         |
|      |                                   |                                     |                                   |                                   |                                     |         |
|      |                                   |                                     |                                   |                                   |                                     |         |
|      |                                   |                                     |                                   |                                   |                                     |         |

### **Appendix E**

Original Form Link Here



P.O. Box 4759 FIRST Re
Helena, MT 59604-4759 Fax: 406-4

### First Report

Fax: 406-495-5020 Voice: 800-332-6102 Claims Examiner Date Stamp

| Worked next scheduled shift   Off work more than 4 work days   Date Last Worked   Date of Return to work   Full wages poid for due of   Salary continued?   Yes   No   Not Sure   Accident   Not Sure   Not Sur   | Home address  Phone Number  |   | Бері   | Code: (if applic   | able)   |              |               |                                |                    |                       |
|--|---|---|--|--|---|--------------|---------------|--------------------------------|--------------------|-----------------------|
| Plone Number   Education   | Phone Number  |   | First Name                                     |  | M.I.  | Date of I    | Birth         | Soci                           | ial Security N<br> | lumber                |
| Cause of Egypar   Date of Death   Description   Description of Accident (continue on separate sheet if necessary)  |   |   |  |  | City  |              |               | State                          | Posta              | l Code<br>-           |
| Date   Inference   Gross earnings for four poperiods   1   Date / Amount   2   Date / Amount   3   Date / Amount   4   Date / Amount   Empedoment Status   Empedoment Status   Empedoment Status   End of Part   Employment Status   End of Part   Employment Status   Employment Status   Employment Status   End of Part   Employer   End of Part   Employer   End of Part   Employer   Emplo   | ( ) -   | ☐ GED o   | or High School Diplom                          | a Male   | Unknown   |              |               |                                |                    |                       |
| preceding the rique;   1   1   1   1   1   1   1   1   1   |   |   |  |  |   |              |               |                                |                    | - ( )                 |
| Part   Time   Seasonal   Volunter   worked pre-week   Day   Beveek   Ver   In addition to goos examage circle dayoe worker received   Board & Room   Overnine   Bronas   Commissions   Other.   Estimated value if any:   Is sick leave available?   Used?   Ves   No   Date   Date of Return to work   Industry   Date   Street   No   Ves   No   Date   | precedi   | earnings for four pay perions<br>and the injury.                            | 1 /  | 2  | . /   |              | 3             | '/                             |                    | /                     |
| Bload & Room   Octemed   Bload   Commissions   Other.   Worked next shed five know from that a knowled set shed held shift   Work from that a knowled set shed in the short   State   Postal Code   Plone Number   Cause of Injury   Date and Time of Inju   | Full Time Part Time   | Seasonal Voluntee   | worked per week:                               |  |   | ☐ Day        | ☐ BI-v        | veekly 🔲 Y                     | /ear               |                       |
| Accident Continue on separate sheet if necessary   | ☐ Board & Room ☐ Ove  | rtime 🔲 Bonus 🔲 Co  | ommissions                                     |  |   |              |               | ☐ Yes ☐                        | No                 | ☐ Yes ☐ No            |
| Cause of Injury  |   |   | ☐ Not Sure                                     |  |   |              |               | yes D                          | ate of<br>No       |                       |
| Cause of Injury  | Description of Accident (cor  | itinue on separate sheet if   |  | ident Des  | cription  | <u>1</u>     |               |                                |                    |                       |
| Actident reported to:   Safety equipment use   Yes   No   No   No   No   No   No   No   N  | Date disability began:  Accident on employer's:   | Date of Death: Accident address or lo                                       | : Occupation:                                  |  |   | Names of     | /             |                                | 2)                 |                       |
| Attending Physician's Name   | premises? Yes No Date employer notified:  |   |  | Postal code:   | -   |              |               |                                |                    | afety equipment used? |
| Attending Physician's Name   |   |   |  | Medica   | ı   |              | ∐ Yes         | ∐No                            | L                  | 」Yes ∐ No             |
| Hospital Name  | Attending Physician's Name  | Address   |  | modrod   | · •   |              | State         | Postal Code                    |                    |                       |
| Signature  This is my claim for workers' compensation benefits due to the on-the-job injury, occupational disease or death of the above named worker. I understand that signing this claim for compensation authorizes the release of rehabilitation records, Social Security records and health care information (medical records) relevant to this claim to the workers' compensation insurer and the insurer's agents. I also understand that if I obtain or exert unauthorized control over workers' compensation benefits, I may be subject to civil and criminal penalties.  Signature of Injured Worker or Beneficiary:    Date:   Employer   | Hospital Name   | Address   |  |  |   |              | State         | Postal Code                    |                    | ,                     |
| This is my claim for workers' compensation benefits due to the on-the-job injury, occupational disease or death of the above named worker. I understand that signing this claim for compensation authorizes the release of rehabilitation records, Social Security records and health care information (medical records) relevant to this claim to the workers' compensation insurer and the insurer's agents. I also understand that if I obtain or exert unauthorized control over workers' compensation benefits, I may be subject to civil and criminal penalties.  Signature of Injured Worker or Beneficiary:    Date:   Employer  | Type of initial medical treatn  | nent received: No tre   | eatment  | cy room Tre  | eatment on-s                                    | ite by empl  | oyer or med   | ical Staff                     | Clinic/D           | :. Office  Hospital   |
| State of Montana DEQ   Government   Federal Employer Identification Number (tax I.D.)   81-0302402   Policy 30041628   | claim for compensation at<br>workers' compensation in<br>subject to civil and crimin  | athorizes the release of re<br>surer and the insurer's ago<br>al penalties. | habilitation records, Soents. I also understan | injury, occupatio<br>cial Security recor<br>d that if I obtain | nal disease o<br>ds and health<br>or exert unau | h care info  | mation (med   | dical records)<br>workers' com | relevant to        | this claim to the     |
| State of Montana DEQ  Mailing Address P.O. Box 200901  Location of operation, if different from mailing address: 1520 East Sixth Ave    State   Postal Code   Phone Number   Fostal Sixth Ave   Postal Sixth Ave   Postal Sixth Ave   Postal Sixth Ave   Postal Code   Phone Number   Fostal Sixth Ave   Postal Code   Phone Number   Postal Sixth Ave   Postal Code   Phone Number   Postal Sixth Ave   Postal Code   Phone Number   Postal Sixth Ave   P | E 1 N   |   | D : D :  | Employ   | er  |              | E 1 1E        | 1 71                           |                    | 1 ( 15)               |
| P.O. Box 200901  Location of operation, if different from mailing address:  1520 East Sixth Ave    Employer is a   Sole Proprietorship   Partnership   Corporation   Limited Liability Company   Injured worker is a   Sole Proprietorship   Partnership   A member of the employer's (sole proprietor or) family living in the employer's household.    Do you have any   If yes, please explain fully. Use separate sheet if you need additional space. reason to question   Yes   No this accident?   Agent's Telephone Number   Agent's Telephone Number   Agent's Telephone Number   Date:  |   | a DEQ   | ~  | ent  |   |              |               |                                |                    |                       |
| Location of operation, if different from mailing address:  1520 East Sixth Ave    Employer is a   Sole Proprietorship   Partnership   Corporation   Limited Liability Company   Injured worker is a   Sole Proprietorship   Partnership   A member of the employer's (sole proprietor or) family living in the employer's household.    Do you have any   If yes, please explain fully. Use separate sheet if you need additional space.   Was worker injured while in your employ?   yes   Insurance Agent's Name   Insurance Agency   Agent's Telephone Number   Official title:   Date:   |   |   | City   | Helena   |   |              |               |                                |                    |                       |
| Employer is a Sole Proprietorship Partnership Corporation Limited Liability Company Injured worker is a Sole Proprietorship Partnership A member of the employer's (sole proprietor or) family living in the employer's household.  Do you have any reason to question Yes No this accident?  Insurance Agency Insurance Agency Agent's Telephone Number ()  Prepared by: Official title: Date:  |   |   | ss:  |  | Nature of Bu                                    | isiness or S | IC Code:      | Self-Insur                     | red? \[ Y          | es 🗌 No               |
| Do you have any reason to question   | Employer is a Sole Propr  | ietorship 🔲 Partnership   |  |  |   |              |               |                                |                    |                       |
| Insurance Agent's Name  Insurance Agency Agent's Telephone Number ( ) -  Prepared by:  Official title: Date:   | Do you have any reason to question Yes  | If yes, please  |  |  | , ,   |              |               |                                | Was wor            | ker injured while in  |
|  |   |   | Insurance Agency                               |  |   |              | Agent's Tel   | ephone Nun                     | nber               |                       |
| Lawrence P. Alheim, Jr. Safety Director  |   |   |  |  |   |              | ( )           | -                              | Date:              |                       |
|  | Lawrence P. A   | lheim, Jr.  | Safety   | y Director   |   |              |               |                                |                    |                       |
| under which you report   |   |   | 1 : 15 1 10                                    |  |   |              |               |                                |                    |                       |
| employee's wages:  Authorized Employer's Signature:  Date:   | Payroll Classification Code   | At  | uthorized Employer's S                         |  |   |              |               | _ Date:_                       |                    |                       |
| Claim Administrator's Claim Number:  Date reported to  | Payroll Classification Code under which you report  |   |  | Incurar O  |   |              |               |                                |                    |                       |
| Third Party Administrator's Name: Claim Administrator's Address: nsurer FEIN:  | Payroll Classification Code<br>under which you report<br>employee's wages:  |   | ed to  | ilisurer O   | The al  |              |               |                                |                    | cceptions:            |
| Insurer's Name: Chird Party Administrator's FEIN:  | Payroll Classification Code<br>under which you report<br>employee's wages:<br>Claim Administrator's Claim                             | Claim Admi  | ed to<br>inistrator:                           |  | The al<br>(Attac                                |              |               |                                | ked)               | . –                   |
| Policy Number: Policy Effective Date: Policy Expiration Date:  | Payroll Classification Code<br>under which you report<br>employee's wages:  Claim Administrator's Claim Third Party Administrator's N | Claim Admi  | ed to<br>inistrator:                           |  | The al<br>(Attac                                | h extra she  | ets if box at | right is checl                 | ked)               | . –                   |

### **Appendix F**

Original Form Link Here



# STATE OF MONTANA RISK MANAGEMENT & TORT DEFENSE DEPARTMENT OF ADMINISTRATION P.O. BOX 200124 - HELENA, MT 59620-0124

(406) 444-2421 FAX (406) 444-2592

|   | REP              | ORT OF IN    | CIDENT                        |                |   |
|---|------------------|--------------|-------------------------------|----------------|---|
| Reporting Person:   |                  | Job Title:   |                               |                |   |
| Department:   |                  | Division:    |                               |                | Phone:  |
| Date/Time of Incident:                                      | Location of I    | Incident:    |                               |                |   |
| COMPLE  | TE ONLY TH       | E SECTION TH | AT APPLIES                    | TO YOUR        | LOSS  |
|   |                  |              |                               |                |   |
| VEHICLE  PERSONAL INJURY                                    | □ PROPER         | TY DAMAGE    | ☐ CYBER/I                     | DATA SEC       | URITY/OTHER INCIDENT  |
|   |                  | VEHICL       | E                             |                |   |
| ACCIDENT INFORMATION  |                  |              |                               |                |   |
| Were Police Notified? Yes No No                             |                  | Police Depa  | rtment Name:                  |                |   |
| Investigating Officer's Name:                               |                  | ]            | Investigation Offi            | cers Phone Nu  | ımber   |
| Were Citations Issued? No  Yes STATE                        | E Vehicle Driver | OTHER Vehicl | e Driver 🔲                    |                |   |
| Weather Conditions: Clear? Rain? Sn                         | ow? Other?       | Describe     |                               |                |   |
| Roadway Conditions: Dry? Wet? Ley?                          | Snow packe       | d? Other?    | Describe                      |                |   |
| Light Conditions: Daylight?  Darkness?  Darkness?           | Dusk? Daw        | n? Other?    | Describe                      |                |   |
| Vehicle Speed: STATE Vehicle?                               |                  | OTHER Vehi   | icle?                         |                |   |
| License No.   | Attachment No    |              | At                            | ttachment No.  |   |
|   | Est. Repair      |              | Es                            | st. Repair_    |   |
| Describe Accident/Incident in detail:                       |                  |              |                               | Accio          | dent Diagram  |
|   |                  |              | INDICATE<br>NORTH<br>BY ARROW | ACCIDENT DIAGR | INDICATE NORTH IN THE NORTH IN |
| (use blank paper for additional                             | ıl information)  |              |                               | 1              |   |
| Signature of Driver:  |                  |              |                               | Date:          |   |
| STATE VEHICLE INFORMATION                                   |                  |              |                               |                |   |
| Department Owning Vehicle:                                  |                  |              |                               |                | Phone No.   |
|   |                  |              |                               |                | Phone No.   |
| Driver's Name: For What Purpose was the Vehicle Being Used? |                  |              |                               |                |   |
| Plate No.   | VIN No           | ).           |                               | Make/Mo        | del/Vear:   |
|   | 71111            |              |                               | 1,14KG 1/10    | 40.2.2.4.1  |

| Location Where Vehicle May I     | Be Seen (Address)?              |  |               |               | Equip. No.       |                 |  |
|----------------------------------|---------------------------------|--|---------------|---------------|------------------|-----------------|--|
| OTHER VEHICLE IN                 | NFORMATION                      |  |               |               |                  |                 |  |
| Plate No./State:                 | VIN No.:                        |  | Make/         | Model/Year:   | :                |                 |  |
| Owner Name:                      | <b>-</b>                        |  | _ I           |               |                  |                 |  |
| Address:                         |                                 |  |               |               | Phone N          | 0.:             |  |
| Driver's Name:                   |                                 |  |               |               | l                |                 |  |
| Address:                         |                                 |  |               |               | Phone N          | 0.:             |  |
| Insurance Co.:                   |                                 | Policy No.:                            |               |               | Phone N          | 0.:             |  |
| OCCUPANTS                        |                                 |  |               |               |                  |                 |  |
| Name:                            | Address:                        | Age                                    | State<br>Veh. | Other<br>Veh. | Injured<br>Y - N | Describe Injury |  |
|                                  |                                 |  |               |               |                  |                 |  |
|                                  |                                 |  |               |               |                  |                 |  |
|                                  |                                 |  |               |               |                  |                 |  |
| WITNESSES                        |                                 |  |               | •             |                  |                 |  |
| Name:                            | Address:                        |  |               | Phone:        |                  |                 |  |
|                                  |                                 |  |               |               |                  |                 |  |
|                                  |                                 |  |               |               |                  |                 |  |
|                                  |                                 |  |               |               |                  |                 |  |
|                                  |                                 | PERSONAL I                             | NJUR          | Y             |                  |                 |  |
| Name of Injured:                 | Addre                           |  |               |               | P                | hone:           |  |
| Nature of Injury:                |                                 |  |               |               |                  |                 |  |
| Describe clearly how accident/i  | injury occurred:                |  |               |               |                  |                 |  |
|                                  |                                 |  |               |               |                  |                 |  |
|                                  |                                 |  |               |               |                  |                 |  |
|                                  |                                 |  |               |               |                  |                 |  |
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|                                  |                                 | use blank paper for additi             |               |               |                  |                 |  |
| Describe clearly how the loss of | ccurred and give a brief descri | PROPERTY D ption of the property (i.e. |               |               | umber wher       | applicable)     |  |
| ·                                | 9                               |  | ,             | ,             |                  | ,               |  |
|                                  |                                 |  |               |               |                  |                 |  |
|                                  |                                 |  |               |               |                  |                 |  |
|                                  |                                 | ( 111                                  | 1:G           |               |                  |                 |  |
|                                  |                                 | use blank paper for additi             |               |               |                  |                 |  |
| Describe clearly how the incide  |                                 | ER/DATA SECU                           | JRITY         | OTHER         | ₹                |                 |  |
| Describe cicarry now the includ  |                                 |  |               |               |                  |                 |  |
|                                  |                                 |  |               |               |                  |                 |  |
|                                  |                                 |  | 1. 6          | · \           |                  |                 |  |
|                                  |                                 | use blank paper for additi             | onat infori   | паноп)        |                  |                 |  |
| Date                             | Reporting Person's S            | ignature:                              |               |               |                  |                 |  |
| Date                             | Supervisor's Signatur           | re:                                    |               |               |                  |                 |  |
| Date                             | Department Official's           | s Signature:                           |               |               |                  |                 |  |

### **Appendix G**

In accordance with §2-9-303, MCA, the Risk Management & Tort Defense Division (RMTD) may settle any claim for personal injury/property damage in behalf of state agencies. Timely and accurate reporting of claims is critical in order to protect the interests of the state and its employees. Please follow these procedures to report a claim.

- 1. For reporting purposes, claims fall into one of four categories:
- **a. Vehicle** losses arising from the use of state owned, leased, or courtesy vehicles, mobile equipment, and watercraft.
- **b. Personal Injury** losses to 'non-state parties' arising from personal injury or property damage other than vehicles.
- **c. Property** losses to state property other than automobile and personal injury arising from perils such as hail, windstorm, earthquake, fire, theft, etc.
- **d. Cyber/Data Information Security/Other Incident** losses arising from a cyber/data information security/other incident. Please click <a href="here">here</a> for more specific information about when and how to report a cyber/data information security incident.
  - 2. After an agency or university has suffered a loss, the employee most familiar with the incident should immediately notify his/her supervisor and complete a **Report of Incident** form. Citizens or other third parties that incur personal injuries or property damage as a result of the state's negligence, should be told by the involved state employee they may file a claim with Risk Management and Tort Defense by following procedures **Public Reporting a Loss**. For vehicular accidents, guidelines about what information to collect and what to say and do at the accident scene may be found in the **Accident Form** located in the vehicle glove box.
  - 3. The immediate supervisor or his/her designee must conduct an investigation to determine what happened, why it happened, and how the claim can be prevented from recurring.
  - 4. Any catastrophic property loss, data incident, or other loss which involves a fatality or bodily injury, should be telephoned to RMTD claims staff at (406)444-2421 by the immediate supervisor or his/her designee as early as possible the day of the incident, or, if after normal business hours (i.e. 8:00 a.m. to 5:00 p.m.), the next day. The 'Report of Incident' must be signed by the supervisor and submitted to RMTD within 24 hours.
  - 5. For all other losses, the immediate supervisor or designee must assure that a Report of Incident form is accurately completed, signed, and sent to RMTD within 5 business days. Claims that are not reported within 60 days may be denied.

- 6. A <u>Report of Incident</u> form should be initiated even if no injury or property damage resulted from the incident. An incident that occurs today with little consequence for the agency involved, may have serious consequences for others at some future date.
- 7. The <u>Report of Incident</u> form must contain only factual information. State personnel who are completing the reports should exercise caution not to place blame on other state employees or admit liability.
- 8. Do not furnish information on claims or lawsuits to unauthorized persons other than law enforcement officials. Obtain names and address of witness. Refer all other questions to RMTD.
- 9. In the event of a claim involving theft of money, securities, or other property, notify the police immediately and call RMTD claims staff as soon as possible.
- 10. Copies of the Report of Incident form shall be distributed as follows: ORIGINAL
  Risk Management and Tort Defense Division
  1625 11th Avenue
  P.O. Box 200124
  Helena, MT 59620-0124

#### **COPIES**

Department of Transportation, Organizational Development Bureau for claims involving motor pool vehicles. One copy of each report shall be maintained by the respective agency. If possible, photographs and diagrams of the losses should also be provided.

11. Contact us. If a loss occurs during normal business hours you may reach any of our staff at their phone extensions <a href="http://rmtd.mt.gov/aboutus/organizationstaff.aspx">http://rmtd.mt.gov/aboutus/organizationstaff.aspx</a> or call (406)444-2421. In the event of an emergency, after normal business hours call (406)444-2421 and press 1. for Jennie Younkin, 2. for Gordon Amsbaugh, 3. for Kirk Barfuss, or 4. for Brett Dahl. Your phone call will then be transferred to a live person. Follow the instructions at <a href="http://rmtd.mt.gov/claims/agenciesreportclaims.aspx">http://rmtd.mt.gov/claims/agenciesreportclaims.aspx</a> for filing a claim and send the 'Report of Incident' and other appropriate documentation to our office immediately.

### **Appendix H**

#### **UAS Training Guidelines**

Purpose: To certify safe operation of [State Agency] UAS in accordance with its Certificate of Authorization. All staff must complete this flight review who intend to act as pilot in command of an aircraft. This is an interactive process to provide the pilot with a periodic assessment of his or her flying skills and address areas that may adversely affect flight safety.

There are two portions of the review, an oral discussion and in flight practical. This is to ensure that the pilot and observer can comply with regulatory requirements and operate safely.

PIC Maintain Individual Logbook.

#### **Flight Training Scenarios**

1. Problem: The UAS is about to collide with another airborne object such as a bird or another drone

**Solution:** If in auto-pilot mode, regain control of the UAS immediately. Identify the source and location of potential danger with the aid of the Visual Observer, and stop and hover the drone. Always bring the UAS to the ground as quickly as possible if safety permits. If the object can be avoided safely while remaining in the air, maneuver around, over, or under it while maintaining a PIC-determined safe distance.

### 2. Problem: The UAS is about to collide with a stationary object such as a telephone pole or tree

**Solution:** If in auto-pilot mode, regain control of the UAS immediately. Identify the source and location of potential danger with the aid of the Visual Observer, and stop and hover the drone. Once the UAS has been stopped, maneuver around, over, or under the obstacle while maintaining a PIC-determined safe distance.

#### 3. Problem: A large aircraft (airplane or helicopter) passes overhead

**Solution:** If in auto-pilot mode, regain control of the UAS immediately. Identify the source and location of potential danger with the aid of the Visual Observer, and stop and hover the drone. Lower the drone to the ground and quickly and safely as possible.

#### 4. Problem: Inclement weather suddenly arises during a flight

**Solution:** If in auto-pilot mode, regain control of the UAS immediately. Communicate with the Visual Observer to determine direction and type of bad weather (i.e. lightning storm, severe wind, hail, etc.). Recall that most UASs do not perform well or may suffer damage when flown in wet weather. Hail can severely damage or destroy the UAS, and wind can take it off course and/or throw it against objects. It is highly recommended to either alter

your flight plan (such as shortening it) or landing the UAS altogether to prevent property and personal damage.

#### 5. Problem: People wander beneath the UAS area of flight

**Solution:** If in auto-pilot mode, regain control of the UAS immediately. Pilot the drone away from the people. Once the UAS is hovering in a safe position, ensure the Visual Observer maintains visual line of sight with the aircraft and politely inform the people that an unmanned aircraft operation is taking place. Advise them, that for their safety and legalities, they must please move away from the area of flight.

#### 6. Problem: UAS is in autopilot mode when unsafe situation arises

**Solution:** You should always regain manual control of your aircraft in an unsafe situation. Because every autopilot software is different, overriding the autopilot feature will be slightly different within the application interface. However, every DJI controller has a small lever at the top left. Flip the switch to "S" for the Phantom 4 and to "P" for all other DJI UASs to override autopilot mode. You can then manage the control sticks to achieve safe UAS operation.

#### 7. Problem: Stall - Learn how to stall a UAS in order to recover

**Solution:** This is an extremely dangerous scenario to both aircraft, persons, and properties as there is a high likelihood of crashing. Stalls occur when the aircraft loses the lift necessary for flight. A stalling drone will stop flying and freefall. If you practice this scenario, do so at a high elevation in a completely open area free of persons and property. Be prepared to damage or destroy the UAS.

Higher elevations give you more time to recover from a stall. We stalled a Matrice 100 drone by descending the UAS at the most rapid descent speed possible in a constant, full spin. The stall and ensuing freefall occurred when we rapidly rolled the UAS at its maximum extent.

#### 8. Problem: Stall - Learning How to Recover

**Solution:** Recovering from a stall entails recovering lift, and lift occurs perpendicular to the thrust (direction of motion) of the aircraft. First, if the motors have stopped working, recover power by pulling both control sticks on the controller down and in toward each other until power is reestablished. Then, using different power bursts and the control sticks for balance, try to rearrange the aircraft's deadfall until the UAS's belly is parallel with the ground. Immediately increase power to create lift beneath the propellers. Once lift is reestablished, the aircraft should stop freefalling and you can now regain its desired flight path. Again, stalls are dangerous and freefall happens very quickly.

Frequently practicing stall recoveries in a safe environment is excellent practice to become a safe and competent UAS pilot.

#### Flight Review for Proficiency

#### TAKEOFFS, LANDINGS

Task: Normal Takeoff (not automated)

- 1. Maintain takeoff power and hovering within 2m horizontal until safe maneuvering altitude
- 2. Maintain directional control and wind-drift correction.

Task: Normal Landing (not automated)

- 1. Select a suitable touchdown point, considering ground/flight conditions.
- 2. Maintain a stabilized approach
- 3. Touch down at or within 13 feet of specified point.
- 4. Maintain crosswind correction and directional control throughout the approach and landing.

#### **GROUND REFERENCE MANEUVERS**

Perform the following tasks with the camera a) facing away towards a center point at all time and b) with the camera facing in the direction of flight.

#### Fade Out and Up, Fade In and Down (Introductory)

- 1. Select and object then fly equally back and increase altitude from the object.
- 2. Return to the object flying equally towards it with decreasing altitude to your starting point.

#### Task: Turns Around a Point (Intermediate)

- 1. Select a suitable ground reference point.
- 2. Plan to enter left or right at 25 50 feet agl, at an appropriate distance from the reference point.
- 3. Apply wind-drift correction to track a constant radius turn around the reference point. Ensure the camera constantly faces toward the center of the circle.
- 4. Divide attention between UAS control and ground track while maintaining coordinated flight.
- 5. Maintain altitude, ±5 feet; maintain airspeed, \( \) ±2 knots.

#### **Task: Rectangular Course (Advanced)**

1. Select a suitable reference area.

- 2. Enter a left or right pattern, 25 50 feet agl ser an appropriate distance from the selected area, 145° to the downwind leg.
- 3. Apply wind-drift correction to maintain a constant ground track.
- 4. Divide attention between UAS control and ground track while maintaining coordinated flight.
- 5. Maintain altitude, ±5 feet; maintain airspeed, ±2 knots.

#### PERFORMANCE MANEUVER

#### Task: Steep Turns (Introductory)

- 1. Establish the recommended airspeed and heading.
- 2. Roll into a coordinated 360° turn; maintain Maximum Yaw (45° tilt) angular velocity of 200 Degrees per second. Note: Many UAVs will not allow this.
- 3. Perform the task in the opposite direction
- 4. Maintain the entry altitude,  $\pm 10$  feet, airspeed,  $\pm 2$  knots, bank,  $\pm 5^{\circ}$ ; and roll out on the entry heading,  $\pm 10^{\circ}$  max.

#### **EMERGENCY PROCEDURES**

#### Task: Loss of control or communications

- 1. Select an appropriate course of action.
- 2. HOME button setup? Failsafe RTH will be automatically activated if the remote controller signal is lost for more than three seconds and Home Point was successfully recorded. Know the difference between DJI and other aircraft procedures. demonstration
- 3. Vortex Ring State Recovery move at a slope to come down to avoid Oral
- 4. Stall recovery reduce angle of attack then increase power. Oral
- 5. Loss of Motor Power See sUAS Aircraft Flight Manual Oral
- 6. Loss of GPS Signal See sUAS Aircraft Flight Manual Oral
- 7. Loss of Control frequency See sUAS Aircraft Flight Manual Oral
- 8. Flyaway See sUAS Aircraft Flight Manual Oral
- 9. Aircraft Battery Failure See sUAS Aircraft Flight Manual Oral
- 10. Transmitter Battery Failure - See sUAS Aircraft Flight Manual Oral
- 11. Fire See sUAS Aircraft Flight Manual Oral
- 12. Structural Failure See sUAS Aircraft Flight Manual Oral
- 13. Pilot Incapacitation See sUAS Aircraft Flight Manual Oral
- 14. Controlled Flight into Terrain and Stalls Oral

| Instructor | Date | Pilot | Date |
|------------|------|-------|------|
|            |      |       |      |