U.S. Department
of Transportation
**Federal Aviation
Administration**

800 Independence Ave., S.W.
Washington, D.C. 20591

August 14, 2015

Exemption No. 12464
Regulatory Docket No. FAA–2015–1992

Mr. Edward Cooley
Cooley Drone Services
18921 Chaville Road
Lutz, FL 33558

Dear Mr. Cooley:

This letter is to inform you that we have granted your request for exemption. It transmits our decision, explains its basis, and gives you the conditions and limitations of the exemption, including the date it ends.

By letter dated May 15, 2015, you petitioned the Federal Aviation Administration (FAA) on behalf of Cooley Drone Services (hereinafter petitioner or operator) for an exemption. The petitioner requested to operate an unmanned aircraft system (UAS) to conduct aerial photography and videography.

See Appendix A for the petition submitted to the FAA describing the proposed operations and the regulations that the petitioner seeks an exemption.

The FAA has determined that good cause exists for not publishing a summary of the petition in the Federal Register because the requested exemption would not set a precedent, and any delay in acting on this petition would be detrimental to the petitioner.

Airworthiness Certification

The UAS proposed by the petitioner are the DJI Phantom Vision 2 Plus and the DJI Phantom 3.

The petitioner requested relief from 14 CFR part 21, *Certification procedures for products and parts, Subpart H—Airworthiness Certificates*. In accordance with the statutory criteria provided in Section 333 of Public Law 112−95 in reference to 49 U.S.C. § 44704, and in

consideration of the size, weight, speed, and limited operating area associated with the aircraft and its operation, the Secretary of Transportation has determined that this aircraft meets the conditions of Section 333. Therefore, the FAA finds that the requested relief from 14 CFR part 21, *Certification procedures for products and parts, Subpart H—Airworthiness Certificates*, and any associated noise certification and testing requirements of part 36, is not necessary.

The Basis for Our Decision

You have requested to use a UAS for aerial data collection[1]. The FAA has issued grants of exemption in circumstances similar in all material respects to those presented in your petition. In Grants of Exemption Nos. 11062 to Astraeus Aerial (*see* Docket No. FAA−2014−0352), 11109 to Clayco, Inc. (*see* Docket No. FAA−2014−0507), 11112 to VDOS Global, LLC (*see* Docket No. FAA−2014−0382), and 11213 to Aeryon Labs, Inc. (*see* Docket No. FAA−2014−0642), the FAA found that the enhanced safety achieved using an unmanned aircraft (UA) with the specifications described by the petitioner and carrying no passengers or crew, rather than a manned aircraft of significantly greater proportions, carrying crew in addition to flammable fuel, gives the FAA good cause to find that the UAS operation enabled by this exemption is in the public interest.

Having reviewed your reasons for requesting an exemption, I find that—

- They are similar in all material respects to relief previously requested in Grant of Exemption Nos. 11062, 11109, 11112, and 11213;
- The reasons stated by the FAA for granting Exemption Nos. 11062, 11109, 11112, and 11213 also apply to the situation you present; and
- A grant of exemption is in the public interest.

Our Decision

In consideration of the foregoing, I find that a grant of exemption is in the public interest. Therefore, pursuant to the authority contained in 49 U.S.C. 106(f), 40113, and 44701, delegated to me by the Administrator, Cooley Drone Services is granted an exemption from 14 CFR §§ 61.23(a) and (c), 61.101(e)(4) and (5), 61.113(a), 61.315(a), 91.7(a), 91.119(c), 91.121, 91.151(a)(1), 91.405(a), 91.407(a)(1), 91.409(a)(1) and (2), and 91.417(a) and (b), to the extent necessary to allow the petitioner to operate a UAS to perform aerial data collection. This exemption is subject to the conditions and limitations listed below.

[1] Aerial data collection includes any remote sensing and measuring by an instrument(s) aboard the UA. Examples include imagery (photography, video, infrared, etc.), electronic measurement (precision surveying, RF analysis, etc.), chemical measurement (particulate measurement, etc.), or any other gathering of data by instruments aboard the UA.

Conditions and Limitations

In this grant of exemption, Cooley Drone Services is hereafter referred to as the operator.

Failure to comply with any of the conditions and limitations of this grant of exemption will be grounds for the immediate suspension or rescission of this exemption.

1. Operations authorized by this grant of exemption are limited to the DJI Phantom Vision 2 Plus and the DJI Phantom 3 when weighing less than 55 pounds including payload. Proposed operations of any other aircraft will require a new petition or a petition to amend this exemption.

2. Operations for the purpose of closed-set motion picture and television filming are not permitted.

3. The UA may not be operated at a speed exceeding 87 knots (100 miles per hour). The exemption holder may use either groundspeed or calibrated airspeed to determine compliance with the 87 knot speed restriction. In no case will the UA be operated at airspeeds greater than the maximum UA operating airspeed recommended by the aircraft manufacturer.

4. The UA must be operated at an altitude of no more than 400 feet above ground level (AGL). Altitude must be reported in feet AGL.

5. The UA must be operated within visual line of sight (VLOS) of the PIC at all times. This requires the PIC to be able to use human vision unaided by any device other than corrective lenses, as specified on the PIC's FAA-issued airman medical certificate or U.S. driver's license.

6. All operations must utilize a visual observer (VO). The UA must be operated within the visual line of sight (VLOS) of the PIC and VO at all times. The VO may be used to satisfy the VLOS requirement as long as the PIC always maintains VLOS capability. The VO and PIC must be able to communicate verbally at all times; electronic messaging or texting is not permitted during flight operations. The PIC must be designated before the flight and cannot transfer his or her designation for the duration of the flight. The PIC must ensure that the VO can perform the duties required of the VO.

7. This exemption and all documents needed to operate the UAS and conduct its operations in accordance with the conditions and limitations stated in this grant of exemption, are hereinafter referred to as the operating documents. The operating documents must be accessible during UAS operations and made available to the Administrator upon request. If a discrepancy exists between the conditions and limitations in this exemption and the procedures outlined in the operating documents,

the conditions and limitations herein take precedence and must be followed. Otherwise, the operator must follow the procedures as outlined in its operating documents. The operator may update or revise its operating documents. It is the operator's responsibility to track such revisions and present updated and revised documents to the Administrator or any law enforcement official upon request. The operator must also present updated and revised documents if it petitions for extension or amendment to this grant of exemption. If the operator determines that any update or revision would affect the basis upon which the FAA granted this exemption, then the operator must petition for an amendment to its grant of exemption. The FAA's UAS Integration Office (AFS−80) may be contacted if questions arise regarding updates or revisions to the operating documents.

8. Any UAS that has undergone maintenance or alterations that affect the UAS operation or flight characteristics, e.g., replacement of a flight critical component, must undergo a functional test flight prior to conducting further operations under this exemption. Functional test flights may only be conducted by a PIC with a VO and must remain at least 500 feet from other people. The functional test flight must be conducted in such a manner so as to not pose an undue hazard to persons and property.

9. The operator is responsible for maintaining and inspecting the UAS to ensure that it is in a condition for safe operation.

10. Prior to each flight, the PIC must conduct a pre-flight inspection and determine the UAS is in a condition for safe flight. The pre-flight inspection must account for all potential discrepancies, e.g., inoperable components, items, or equipment. If the inspection reveals a condition that affects the safe operation of the UAS, the aircraft is prohibited from operating until the necessary maintenance has been performed and the UAS is found to be in a condition for safe flight.

11. The operator must follow the UAS manufacturer's maintenance, overhaul, replacement, inspection, and life limit requirements for the aircraft and aircraft components.

12. Each UAS operated under this exemption must comply with all manufacturer safety bulletins.

13. Under this grant of exemption, a PIC must hold either an airline transport, commercial, private, recreational, or sport pilot certificate. The PIC must also hold a current FAA airman medical certificate or a valid U.S. driver's license issued by a state, the District of Columbia, Puerto Rico, a territory, a possession, or the Federal government. The PIC must also meet the flight review requirements specified in 14 CFR § 61.56 in an aircraft in which the PIC is rated on his or her pilot certificate.

14. The operator may not permit any PIC to operate unless the PIC demonstrates the ability to safely operate the UAS in a manner consistent with how the UAS will be operated under this exemption, including evasive and emergency maneuvers and maintaining appropriate distances from persons, vessels, vehicles and structures. PIC qualification flight hours and currency must be logged in a manner consistent with 14 CFR § 61.51(b). Flights for the purposes of training the operator's PICs and VOs (training, proficiency, and experience-building) and determining the PIC's ability to safely operate the UAS in a manner consistent with how the UAS will be operated under this exemption are permitted under the terms of this exemption. However, training operations may only be conducted during dedicated training sessions. During training, proficiency, and experience-building flights, all persons not essential for flight operations are considered nonparticipants, and the PIC must operate the UA with appropriate distance from nonparticipants in accordance with 14 CFR § 91.119.

15. UAS operations may not be conducted during night, as defined in 14 CFR § 1.1. All operations must be conducted under visual meteorological conditions (VMC). Flights under special visual flight rules (SVFR) are not authorized.

16. The UA may not operate within 5 nautical miles of an airport reference point (ARP) as denoted in the current FAA Airport/Facility Directory (AFD) or for airports not denoted with an ARP, the center of the airport symbol as denoted on the current FAA-published aeronautical chart, unless a letter of agreement with that airport's management is obtained or otherwise permitted by a COA issued to the exemption holder. The letter of agreement with the airport management must be made available to the Administrator or any law enforcement official upon request.

17. The UA may not be operated less than 500 feet below or less than 2,000 feet horizontally from a cloud or when visibility is less than 3 statute miles from the PIC.

18. If the UAS loses communications or loses its GPS signal, the UA must return to a pre-determined location within the private or controlled-access property.

19. The PIC must abort the flight in the event of unpredicted obstacles or emergencies.

20. The PIC is prohibited from beginning a flight unless (considering wind and forecast weather conditions) there is enough available power for the UA to conduct the intended operation and to operate after that for at least five minutes or with the reserve power recommended by the manufacturer if greater.

21. Air Traffic Organization (ATO) Certificate of Waiver or Authorization (COA). All operations shall be conducted in accordance with an ATO-issued COA. The exemption holder may apply for a new or amended COA if it intends to conduct operations that cannot be conducted under the terms of the attached COA.

22. All aircraft operated in accordance with this exemption must be identified by serial number, registered in accordance with 14 CFR part 47, and have identification (N−Number) markings in accordance with 14 CFR part 45, Subpart C. Markings must be as large as practicable.

23. Documents used by the operator to ensure the safe operation and flight of the UAS and any documents required under 14 CFR §§ 91.9 and 91.203 must be available to the PIC at the Ground Control Station of the UAS any time the aircraft is operating. These documents must be made available to the Administrator or any law enforcement official upon request.

24. The UA must remain clear and give way to all manned aviation operations and activities at all times.

25. The UAS may not be operated by the PIC from any moving device or vehicle.

26. All Flight operations must be conducted at least 500 feet from all nonparticipating persons, vessels, vehicles, and structures unless:
    a. Barriers or structures are present that sufficiently protect nonparticipating persons from the UA and/or debris in the event of an accident. The operator must ensure that nonparticipating persons remain under such protection. If a situation arises where nonparticipating persons leave such protection and are within 500 feet of the UA, flight operations must cease immediately in a manner ensuring the safety of nonparticipating persons; and
    b. The owner/controller of any vessels, vehicles or structures has granted permission for operating closer to those objects and the PIC has made a safety assessment of the risk of operating closer to those objects and determined that it does not present an undue hazard.

    The PIC, VO, operator trainees or essential persons are not considered nonparticipating persons under this exemption.

27. All operations shall be conducted over private or controlled-access property with permission from the property owner/controller or authorized representative. Permission from property owner/controller or authorized representative will be obtained for each flight to be conducted.

28. Any incident, accident, or flight operation that transgresses the lateral or vertical boundaries of the operational area as defined by the applicable COA must be reported to the FAA's UAS Integration Office (AFS−80) within 24 hours. Accidents must be reported to the National Transportation Safety Board (NTSB) per instructions contained on the NTSB Web site: www.ntsb.gov.

If this exemption permits operations for the purpose of closed-set motion picture and television filming and production, the following additional conditions and limitations apply.

29. The operator must have a motion picture and television operations manual (MPTOM) as documented in this grant of exemption.

30. At least 3 days before aerial filming, the operator of the UAS affected by this exemption must submit a written Plan of Activities to the local Flight Standards District Office (FSDO) with jurisdiction over the area of proposed filming. The 3-day notification may be waived with the concurrence of the FSDO. The plan of activities must include at least the following:
    a. Dates and times for all flights;
    b. Name and phone number of the operator for the UAS aerial filming conducted under this grant of exemption;
    c. Name and phone number of the person responsible for the on-scene operation of the UAS;
    d. Make, model, and serial or N−Number of UAS to be used;
    e. Name and certificate number of UAS PICs involved in the aerial filming;
    f. A statement that the operator has obtained permission from property owners and/or local officials to conduct the filming production event; the list of those who gave permission must be made available to the inspector upon request;
    g. Signature of exemption holder or representative; and
    h. A description of the flight activity, including maps or diagrams of any area, city, town, county, and/or state over which filming will be conducted and the altitudes essential to accomplish the operation.

31. Flight operations may be conducted closer than 500 feet from participating persons consenting to be involved and necessary for the filming production, as specified in the exemption holder's MPTOM.

Unless otherwise specified in this grant of exemption, the UAS, the UAS PIC, and the UAS operations must comply with all applicable parts of 14 CFR including, but not limited to, parts 45, 47, 61, and 91.

This exemption terminates on August 31, 2017, unless sooner superseded or rescinded.

Sincerely,
/s/
John S. Duncan
Director, Flight Standards Service

Enclosures

Cooley Drone Services
Small Unmanned Aerial Systems
Aerial Photography and Videography

May 15, 2015

U.S. Department of Transportation
Docket Management System
1200 New Jersey Ave., SE
Washington, DC 20590

Re: Petition of Edward Cooley, dba Cooley Drone Services, for Exemption to Section 333 of the FAA Modernization and Reform Act of 2012

To Whom It May Concern:

Pursuant to Section 333 of the FAA Modernization and Reform Act of 2012 ("Reform Act") and 14 C.F.R. Part 11, Edward Cooley, dba Cooley Drone Services, ("Petitioner"), the operator of a small business to provide commercial aerial photography and videography, hereby applies for an exemption from Federal Aviation Regulations ("FARs") identified below, to allow commercial operation of small unmanned aerial systems ("sUAS").

The exemption is in accordance with protocols outlined in this petition for exemption, the sUAS manufacturer's operations and/or instructions manual ("User's Manual" & "Training Guide"), Petitioner's Operations and Training Manual, and any other requirements established by the FAA pursuant to Section 333 of the Reform Act.

For your convenience, the petition is organized as follows:

1. Petitioner's description
2. Relevant statutory authority
3. Qualifications for approval under Section 333 of the Reform Act
4. Description of proposed operations
5. Regulations from which exemption is requested
6. Public interest
7. Privacy
8. Federal Register summary
9. Conclusion

Petitioner's Description

Petitioner is the retired Vice President of Operations for Tampa International Airport and an instrument-rated private pilot with over 3,000 hours of flight time. Petitioner has been an aircraft owner for over thirty years and a pilot operating in the National Airspace System for over forty-four years. Petitioner is starting up a new aviation business offering aerial photography and videography with the use of sUAS. Specifically, Petitioner wishes to provide aerial photography for building inspections, real estate sales services, commercial photography and videography services, and sUAS flight demonstration

services. Consistent with the requirements of 14 C.F.R. § 11.81(a), Petitioner provides the following information in support for exemption:

The name and address of the Petitioner is:

Edward Cooley
18921 Chaville Rd.
Lutz, FL 33558
813 948-7001 (Home)
813 389-7647 (Cell)
email: ecooley@tampabay.rr.com

Relevant Statutory Authority

This petition for exemption is submitted to fulfill Congress' goal in passing Section 333 (a) through (c) of the Reform Act. In the Reform Act, Congress directed the FAA "to safely accelerate the integration of civil unmanned aircraft systems in the national airspace system" and, under Section 333 of that law, directed the Secretary of Transportation ("FAA Administrator") to consider whether certain unmanned aircraft systems may operate in the National Airspace System ("NAS") before completion of the rulemaking required under Section 333 of the Reform Act. In making this determination, the Secretary is required to determine which types of sUAS's do not create a hazard to users of the NAS or the public or pose a threat to national security in light of the following:

The sUAS's size, weight, speed and operational capability; operation of the sUAS in close proximity to airports and populated areas; and, operation of the sUAS's within visual line of sight of the operator.

If the Secretary determines that such vehicles "may operate in the National Airspace System, the Secretary shall establish requirements for the safe operation of such aircraft in the National Airspace System". In addition, the FAA Administrator has general authority to grant exemptions from its safety regulations and minimum standards when the Administrator decides a requested exemption is in the public interest. See 49 U.S.C. § 44701(f), (authorizing the grant of exemptions from the requirement of regulations prescribed pursuant to Section 44701 (a) or (b) and Section 44702-44716. A party requesting an exemption must explain the reasons why the exemption: (1) would benefit the public as a whole, and (2) would not adversely affect safety (or how it would provide a level of safety at least equal to the existing rules). See 14 C.F.R. §11.81 FAA, Petition for Exemptions.

Qualification for Approval Under Section 333 of the Reform Act

The proposed operations in this petition for exemption qualify for expedited approval under Section 333 of the Reform Act. Each of the statutory criteria and other potentially relevant factors are satisfied.

The proposed operations would permit the use of small and relatively inexpensive sUAS under controlled conditions in airspace that is, (1) limited; (2) predetermined; (3) controlled as to access, and

(4) would provide an increased level of safety beyond that existing when fixed or rotary wing aircraft are used to accomplish the same purpose.

Petitioner's sUAS are rotorcraft weighing less than 55 pounds including payload. They operate, under normal conditions, at a speed of no more than 87 knots and have the capability to hover, and move in the vertical and horizontal plane simultaneously.

Petitioner's sUAS's will operate in line-of-sight and will operate only within a sterile area described in the enclosed Operations and Training Manual. Such operations will insure that the sUAS will "not create a hazard to users of the National Airspace System or the public."

Given the small size of the sUAS's involved and the restricted sterile environment within which they will operate, this petition for exemption falls squarely within that zone of safety, i.e. an equivalent level of safety, in which Congress envisioned that the FAA must, by exemption, allow commercial operations of sUAS's to commence immediately. Also, due to the size of the sUAS's and the restricted areas in which the sUAS's will operate, approval of the application presents no national security issue.

Considering the clear direction in Section 333 of the Reform Act, the authority contained in the Federal Aviation Act, as amended, the equivalent level of safety surrounding the proposed operations, and the significant public benefit, including enhanced safety, reduction in environmental impacts, including reduced emissions associated with allowing sUAS's for the proposed operations, the grant of the requested exemptions is also in the public interest. Accordingly, Petitioner respectfully requests that the FAA grant the requested exemption without delay.

Description of Proposed Operations

The attached Operations and Training Manual describes, in detail, the procedures for Petitioner's proposed sUAS operations. To assist the FAA in the safety assessment of Petitioner's proposed sUAS operations, below is a summary of operational limitations and conditions which will insure an equivalent or higher level of safety to operations conducted under current regulatory guidelines.

The sUAS aircraft that are proposed to be utilized under this grant of exemption are the DJI Phantom Vision 2 Plus and the DJI Phantom 3. Detailed information on these aircraft is included in the attachments of this petition.

1. The sUAS will weigh less than 55 pounds with payload.
2. The sUAS will not operate at a speed greater than 87 knots (100 mph).
3. Flights will operate within line-of-sight of the pilot and visual observer.
4. Maximum total flight time for each operational flight will be 25 minutes. Flights will be terminated at 25% battery power reserve, should that occur prior to the 25 minute limit.
5. Flight will be operated at an altitude of no more than 400 feet above ground level ("AGL").
6. Minimum crew for each operation will consist of a Pilot and a Visual Observer ("VO").

The sUAS pilot will be the Pilot in Command ("PIC"). If a pilot certificate holder other than the sUAS Pilot is present and posses the necessary PIC qualifications, that person can be designated as PIC.

A briefing will be conducted in regard to the planned sUAS operations prior to each day's activities. It will be mandatory that all personnel who will be performing duties within the boundaries of the safety perimeter be present for this briefing.

PIC and VO will have been trained in the operation of sUAS generally and will have received up-to-date information on the particular sUAS to be operated, as required in the Operations and Training Manual.

PIC and VO will at all times be able to communicate by voice. Written permission from the relevant property holders will be obtained.

All required permissions and permits will be obtained from federal, state and local jurisdictions, including local law enforcement, fire or other appropriate governmental agencies.

If the sUAS loses communications or loses its GPS signal, the sUAS is equipped with advanced safety features that will allow the sUAS to automatically return to a pre-determined location.

The sUAS will have the capability to abort a flight in case of unpredicted obstacles or emergencies.

Regulation From Which Exemption is Requested

The Federal Aviation Act expressly grants the FAA the authority to issue exemptions. By its terms, this statutory authority includes exempting civil aircraft, as the term is defined under § 40101 of the Act, including sUAS's, from the safety regulations and minimum standards when the Administrator decides a requested exemption is in the public interest. See 49 U.S.C. § 44701(f) (authorizing the grant of exemptions from a requirement of regulations prescribed pursuant to Section 44701(a) or (b) and Sections 44702-44716).

Petitioner seeks an exemption from several interrelated provisions of 14 C.F.R. Parts 21, 45, 61 and 91 for purposes of conducting aerial photography and videography using sUAS. Listed below are (1) the specific sections of 14 C.F.R. for which exemption is sought; and (2) the operating procedures and safeguards that Petitioner has established which will ensure a level of safety equal to or better than the rules from which exemption is sought.

A. 14 C.F.R. Part 21, Subpart H, Airworthiness Certificates and 14 C.F.R. § 91.203(a)(1).

This petition seeks an exemption from 14 C.F.R. Part 21, Subpart H, which establishes the procedural requirements for the issuance of airworthiness certificates as required by 14 C.F.R. § 91.203(a)(1). Given the size and limited operating area associated with the sUAS's to be utilized by the Petitioner, an exemption from Part 21, Subpart H, meets the requirements of an equivalent level of safety under Part 11 and Section 333 of the Reform Act.

The Federal Aviation Act (49 U.S.C. § 44701(f)) and Section 333 of the Reform Act both authorize the FAA to exempt aircraft from the requirement for an airworthiness certificate, upon consideration of the size, weight, speed, operational capability and proximity to airports and populated areas of the particular sUAS.

In all cases, an analysis of these criteria demonstrates that the sUAS operated without an airworthiness certificate, in the restricted environment and under conditions proposed, will be at least as safe, or safer, than a conventional rotorcraft operating with an airworthiness certificate without the restrictions and conditions of the proposed sUAS operations.

Equivalent Level of Safety

The sUAS to be operated hereunder weighs less than 55 pounds fully loaded, carries neither a pilot nor passengers, carries no explosive materials or flammable liquid fuels and operate exclusively within a secure defined area. Unlike other civil aircraft, the proposed operations in this petition for exemption will be controlled and monitored by the Operator, pursuant to the Operations and Training Manual's requirements.

These safety enhancements, which already apply to civil aircraft operated in connection with existing inspection operations, provide a greater degree of safety to the public and property owners than conventional operations conducted with airworthiness certificates issued under 14 C.F.R. Part 21, Subpart H. Lastly, application of these same criteria demonstrates that there is no credible threat to national security posed by the sUAS, due to its size, speed of operation, location of operation, lack of explosive materials or flammable liquid fuels and inability to carry a substantial external load.

B. 14 C.F.R. Part 27: Airworthiness Standards: Normal Category Rotorcraft

14 C.F.R. Part 27 sets forth the procedural requirements for airworthiness certification of normal category rotorcraft. To the extent the Petitioner's sUAS would otherwise require certification under Part 27, as a rotorcraft, Petitioner's argument for exemption from these airworthiness standards for the same reasons identified in the exemption request from 14 C.F.R. Part 21 Subpart H would apply.

C. Aircraft Marking and Identification Requirements: 14 C.F.R. §§ 91.9(c), 45.23(b) and 45.27(a).

This petition seeks an exemption from the aircraft marking and identification requirements of 14 C.F.R. §§ 91.9(c), 45.23(b) and 45.27(a).

14 C.F.R. § 91.9(c), Civil aircraft flight manual, marking and placard requirements, provides that:

No person may operate a U.S. registered civil aircraft unless that aircraft is identified in accordance with Part 45 of this chapter.

14 C.F.R. § 45.23(b), Marking of the Aircraft, states:

When marks include only the Roman capital letter "N" and the registration number is displayed on limited, restricted or light-sport category aircraft or experimental or provisionally certificated aircraft, the operator must also display on that aircraft near each entrance to the cabin, cockpit, or pilot station, in letters not less than two inches, nor more than six inches high, the words "Experimental", "Restricted", "Light-sport", "Limited", or "Provisional", as applicable.

14 C.F.R. § 45.27(a), Rotorcraft, states:

Each operator of a rotorcraft must display on the rotorcraft horizontally on both surfaces of the cabin, fuselage, boom, or tail, the marks required by §45.23.

Exemption from § 45.23(b) is warranted because the sUAS has no entrance to the cabin, cockpit, or pilot station on which the word "Experimental" et al can be placed. Moreover, given the size of the sUAS, two-inch letters would be impossible. The word "Experimental" will be placed on the fuselage in compliance with § 45.29(f).

Given the nature of the specific relief sought by this exemption request, Petitioner requires relief from the associated marking and identification requirements of § 45.27(a) and § 91.9(c), which would require compliance with § 45.23(b).

Equivalent Level of Safety

An equivalent level of safety for exemptions to the aircraft marking and identification requirements of §§ 91.9(c), 45.23(b) and 45.27(a), will be provided by having the sUAS marked on the fuselage as required by § 45.29(f) where the pilot, observer and others working with the sUAS will see the identification of the sUAS as "Experimental". Additionally, Petitioner will ensure compliance with any requests of sUAS marking by the FAA.

As examples, the FAA has issued the following exemptions to the aircraft marking requirements of § 45.23(b): Exemption Nos. 10700, 8738, 10167 and 10167A.

D. 14 C.F.R. § 61.113(a) and (b): Private Pilot Privileges and Limitations: Pilot in Command.

This petition seeks exemption from the private pilot privileges and limitations of § 61.113 (a) and (b), which states:

Private Pilot Privileges and Limitations: Pilot in Command.

(a) Except as provided in paragraphs (b) through (h) of this section, no person who holds a private pilot certificate may act as pilot in command of an aircraft that is carrying passengers or property for compensation or hire, nor may that person, for compensation or hire, act as pilot in command of an aircraft.

(b) A private pilot may, for compensation or hire, act as pilot in command of an aircraft in connection with any business or employment if:

(1) The flight is only incidental to that business or employment, and
(2) The aircraft does not carry passengers or property for compensation or hire.

Section 61.113(a) limits private pilots to being in command of non-commercial flights. Section 61.113(b)(1) provides an exception that allows a private pilot to command an aircraft without passengers or property, in connection with business or employment if "the flight is only incidental to that business or employment." This exception likely does not apply to the proposed operations under this petition for exemption, as the flights are not incidental to the proposed aerial photography and video but rather essential to it. Accordingly, this petition seeks an exemption to § 61.113(a) commercial limitation and/or § 61.113(b)(1) requirement that the flight be incidental to the business to benefit from the exception.

Equivalent Level of Safety

Because the sUAS will not carry a pilot or passengers, the proposed operations can achieve the equivalent level of safety to § 61.113(a) and (b), by requiring the PIC operating the sUAS to have the training on operation of the sUAS as defined in the Operations and Training Manual for the sUAS.

Unlike a conventional aircraft that carries the pilot and passengers, the sUAS is remotely controlled with no living thing on board. Moreover, the area of operation is controlled and restricted, and all flights are planned and coordinated in advance.

The risks associated with the operation of small, lightweight sUAS are diminished from the level of risk associated with commercial operations contemplated by Part 61 when drafted, that allowing the proposed operations in this petition for exemption by requiring the PIC operating the sUAS to have training on operation of the sUAS as defined in the Operations and Training Manual for the sUAS, and that the sUAS is remotely controlled with no living thing on board, exceeds the present level of safety achieved by 61.113 (a) and (b).

E. 14 C.F.R. § 91.9(b)(2): Civil Aircraft Flight Manual in the Aircraft. This petition seeks an exemption from the flight manual requirements of 14 C.F.R. § 91.9(b)(2), which states: No person may operate a U.S. -registered civil aircraft-

(2) For which an Airplane or Rotorcraft Flight Manual is not required by § 21.5 of this chapter, unless there is available in the aircraft a current approved Airplane or Rotorcraft Flight Manual, approved manual materials, markings, and placards or any combination thereof.

Given the size, configuration, and load capacity the sUAS has no ability to carry such a manual on the aircraft, not only because there is no pilot on board, but because there is simply no room or capacity to carry such an item on the aircraft.

Equivalent Level of Safety

The safety-related purpose of this manual requirement can be equally satisfied by maintaining the sUAS flight manual at the ground control point where the pilot flying the sUAS will have immediate access to it. Accordingly, Petitioner requests an exemption from the § 91.9(b)(2) flight manual requirements, on the condition that the sUAS flight manual be available at the control point during each operation.

As examples, the FAA has issued the following exemptions to this regulation: Exemption Nos. 8607, 8737, 8738, 9299, 9299A, 9565, 9565B, 10167, 10167A, 10602, 32827, and 10700.

F. 14 C.F.R. § 91.7(a): Civil Aircraft Airworthiness

This Petition seeks an exemption from 14 C.F.R. § 91.7(a), which requires that a civil aircraft be in an airworthy condition to be operated. Since there will be no airworthiness certificate issued for the sUAS, should this exemption be granted, no FAA regulatory standard will exist for determining airworthiness.

Equivalent Level of Safety

Given the size of the sUAS and the requirements contained in the sUAS Operations and Training Manual for maintenance and use of safety checklists prior to each flight, an equivalent level of safety will be provided.

As examples, the FAA has issued the following exemptions to this regulation: Exemption Nos. 8607, 8737, 8738, 9299, 9299A, 9565, 9565B, 10167, 10167A, 10602, 32827, and 10700.

G. 14 C.F.R. § 91.103 Preflight Action

This petition seeks an exemption from § 91.103, which requires a PIC to become familiar with specific information before flight, including information contained in the FAA approved Flight Manual on board the aircraft. Inasmuch as the FAA approved Flight Manual will not be provided for the sUAS, an exemption will be needed.

Equivalent Level of Safety

An equivalent level of safety will be provided by following the sUAS comprehensive preflight checklist. The PIC will take all actions, including reviewing weather, flight battery requirements, landing and takeoff distances, and aircraft performance data, before initiating the flight.

H. 14 C.F.R. § 91.105 Flight Crewmembers at Stations.

This Petition seeks an exemption from § 91.105, which requires flight crewmembers to be at their stations during takeoffs and landings and while enroute with their seatbelts and/or shoulder harness fastened unless the absence is necessary to perform duties in connection with the operation of the aircraft, or in connection with physiological needs. Inasmuch as sUAS are

remotely piloted aircraft by their design, they do not have flight crewmembers on board, but instead flight control is accomplished through the use of a control box that communicates with the sUAS via radio communications, and exemption will be needed.

Equivalent Level of Safety

Given the size and operational characteristics of the sUAS and the fact that no flight crewmembers are aboard the aircraft an equivalent level of safety will be achieved by having the sUAS operated by the PIC from the control station on the ground in VLOS and under complete operational control at all times in a contained and predetermined area of operations.

I. 14 C.F.R. § 91.109(a): Flight Instruction

This petition seeks an exemption from 14 C.F.R. § 91.109(a), which provides that a person may operate a civil aircraft (except a manned free balloon) that is being used for flight instruction unless that aircraft has fully functioning dual controls. sUAS's and remotely piloted aircraft, by their design, do not have fully functional dual controls. Instead, flight control is accomplished through the use of a control box that communicates with the sUAS via radio communications.

Equivalent Level of Safety

Given the size and speed of the sUAS, an equivalent level of safe training can still be performed without dual controls because no pilot or passengers are onboard the sUAS, and all persons will be a safe distance away should the sUAS experience any difficulties during flight instruction.

The FAA has approved exemptions for flight training without fully functioning dual controls for a number of aircraft and for flight instruction in experimental aircraft. See Exemption Nos. 5778K and 9862A.

J. 14 C.F.R. § 91.119: Minimum Safe Altitudes

This petition seeks an exemption from the minimum safe altitude requirements of 14 C.F.R. § 91.119. Section 91.119 prescribes the minimum safe altitudes under which aircraft may not operate. Section 91.119(c) states that, over other than congested areas, an altitude of 500 feet above the surface, except over open water or sparsely populated areas. In those cases, the aircraft may not be operated closer than 500 feet to any person, vessel, vehicle, or structure. Section 91.119(d)(1) provides: A helicopter may be operated at less than the minimums prescribed in paragraph (b) or (c) of this section, provided each person operating the helicopter complies with any routes or altitudes specifically prescribed for helicopters by the FAA.

The sUAS is prohibited from operating at an altitude above 400 feet AGL. In order to carry out its mission of commercial photography and videography, the sUAS must operate in safe proximity to participating persons and property, and will operate in an approved, predetermined, sterile area away from all non-participating persons and property all in accordance with the Operations and Training Manual.

Equivalent Level of Service

Compared to flight operations with rotorcraft weighing far more than the maximum of 55 pounds proposed herein, and the lack of flammable fuel, any risk associated with these operations is far less than those presently presented with conventional aircraft. An equivalent level of safety will be achieved given the size, weight, speed of the sUAS as well as the location where it will be operated. The sUAS will be operated in a restricted area, where buildings and people will not be exposed to operations without their pre-obtained consent. No flight will be taken without the permission of the property owner and/or local officials. Because of the advance notice to the property owner and participants, all affected individuals will be aware of the planned flight operations. Furthermore, by operating at such low altitudes, the sUAS will not interfere with other aircraft that are subject to the minimum safe altitude regulations.

K. 14 C.F.R. § 91.121 Altimeter Settings

This petition seeks an exemption from 14 C.F.R. § 91.121, which requires a person operating an aircraft to maintain cruising altitude or flight level by reference to an altimeter that is set to the elevation of the departure airport or barometric pressure. An exemption is required because the sUAS does not have a barometric altimeter, but rather a GPS altitude readout.

Equivalent Level of Safety

An equivalent level of safety will be achieved by following the procedures set forth in the Operations and Training Manual. As prescribed in the Manual, the operator will confirm the altitude of the launch site shown on the GPS altitude indicator before flight. Moreover, the PIC will use the GPS altitude indicator to constantly monitor the sUAS elevation, thus insuring operation at safe altitudes.

L. 14 C.F.R. § 91.151(a): Fuel Requirements for Flight in VFR Conditions.

This petition seeks an exemption from 14 C.F.R. § 91.151(a), fuel requirements for flight in VFR conditions.

Section 91.151 states:

(a) No person may begin a flight in the airplane under VFR conditions unless (considering wind and forecast weather conditions) there is enough fuel to fly to the first point of intended landing and, assuming normal cruising speed,
(1) During the day, to fly after that for at least 30 minutes; or
(2) At night, to fly after that for at least 45 minutes.

The battery powering the sUAS provides less than 30 minutes of powered flight, and the sUAS will not be flown at night. An exemption from the 30 minute reserve requirement in 14 C.F.R. § 91.151 is therefore required.

Equivalent Level of Safety

An equivalent level of safety can be achieved by limiting flights to rated flight time or 25% of remaining battery power, whichever happens first. This restriction would be more than adequate to return the sUAS to its planned landing zone from anywhere within its limited operating area. Operation of the sUAS with less than 30 minutes of reserve fuel does not engender the type of risks that Section 91.151(a) was intended to alleviate, given the size and speed of the small sUAS. Moreover, operation will be limited to controlled areas where only people and property owners, or official representatives who have signed waivers and permissions will be allowed.

This request for exemption falls within the scope of prior exemptions. See Exemption 10673 (allowing Lockheed Martin Corporation to operate without compliance with § 91.151(a)). Other examples of exemptions include Exemptions 2689F, 5745, 10673 and 10808.

M. 14 C.F.R. § 91.203(a) and (b) Carrying Civil Aircraft Certification and Registration

This petition seeks an exemption from civil aircraft certification and registration requirements of 14 C.F.R. § 91.203 (a) and (b). The regulation provides in pertinent part:

(a) Except as provided in § 91.715, no person may operate a civil aircraft unless it has within it the following:

(1) An appropriate and current airworthiness certificate.

(b) No person may operate a civil aircraft unless the airworthiness certificate required by paragraph (a) of this section or a special flight authorization issued under § 91.715 is displayed at the cabin or cockpit entrance so that it is legible to passengers or crew.

In addition to the fact that Petitioner is seeking an exemption from the airworthiness certificate display, load capacity and size does not allow it to carry certification and registration documents; (2) the sUAS does not have a cabin or cockpit entrance at which the documents could be displayed; and (3) there are no passengers or crew for whom the certificates need to be displayed.

Equivalent Level of Safety

To the extent these regulations are applicable to the proposed sUAS operations, an equivalent level of safety will be achieved by keeping these documents at the ground control point where the pilot flying the sUAS will have immediate access to them.

As examples, the FAA has issued numerous exemptions to this regulation. A representative sample of other exemptions include, Exemption Nos. 9565, 9665, 9789, 9789A, 9797, 9797A, 9816A and 10700.

N. 14 C.F.R. §§ 91.405(a); 91.407(a)(1); 91.409(a)(2); 91.417(a) and (b); Maintenance Inspections

This petition seeks an exemption from the maintenance inspection requirements of 14 C.F.R. §§ 91.405(a); 91.407(a)(1); 91.409(a)(2); 91.417(a) and (b). These regulations specify maintenance and inspection standards in reference to 14 C.F.R. 43.

14 CFR 91.405 (a) – Maintenance Required

This section and Part 43 apply only to aircraft with an airworthiness certificate; therefore these sections will not apply.

In the absence of regulatory provisions dealing with sUAS operation for maintenance required, Petitioner has included maintenance and inspection procedures in its Operations and Training Manual which is attached to this Petition. These procedures are consistent with the manufacturer's recommendation and best practices regarding sUAS maintenance, inspection and recordkeeping .

Recommendations for maintenance required:

1. Maintenance will be accomplished by Petitioner pursuant to the manufacturer'recommendations and Petitioner's Operations and Training Manual.
2. Maintenance, preventive maintenance, rebuilding, and alteration will be successfully accomplished by trained personnel only.
3. The Petitioner's sUAS Operations and Training Manual includes the Inspection Program which details how to enter worked preformed in the maintenance log for scheduled, unscheduled maintenance or functional test flights that are performed.
4. Petitioner shall only operate its sUAS with all systems functioning per manufacture's specification in a discrepancy free condition.
5. These records will be maintained at the principle base for operation for the life of the aircraft or as required by Federal Aviation Regulations.

Petitioner and the Aircraft Manufacturer (DJI) are the most familiar with the aircraft and best suited to maintain the aircraft in an airworthy condition. This maintenance process allows for an equivalent level of safety to be achieved due to the limited size, scope and area of operations.

14 CFR 91.407 (a) (1) – Operation after Maintenance, Preventive Maintenance, Rebuilding or Alteration

This section and Part 43 apply only to aircraft with an airworthiness certificate; therefore these sections will not apply.

In the absence of regulatory provisions dealing with sUAS operation after maintenance, preventive maintenance, rebuilding, alteration or functional test flights, Petitioner has developed requirements to address these topics, which are contained in Petitioner's sUAS Operations and Training Manual, Inspection Program and Manufacturer's User Guides.

1. Maintenance will be accomplished by Petitioner pursuant to the manufacturer's recommendations and Petitioner's sUAS Operations and Training Manual and Inspection Program.

2. Maintenance, preventive maintenance, rebuilding and alteration will be successfully accomplished by trained personnel only.

3. Functional test flights will be performed by the PIC when required, the sUAS shall only be returned to service when this functional test flight is successfully completed. If a mechanical issue arises the sUAS can land safely or be recovered within the Operations Area.

4. The Petitioner's sUAS Operations and Training Manual details how to enter in the maintenance log scheduled and unscheduled maintenance or functional test flights that are performed.

5. Petitioner shall only operate its sUAS with all systems functioning per manufacturer's specification in a discrepancy free condition.

6. These records will be maintained at the principle base for operation for the life of the aircraft or as required by Federal Aviation Regulations.

Petitioner and the Aircraft Manufacturer (DJI) are the most familiar with the aircraft and best suited to maintain the aircraft in an airworthy condition. These maintenance procedures allow for an equivalent level of safety to be achieved due to the limited size, scope and area of operations.

14 CFR 91.409 (a) (1) and (2) – Inspections

This section and Part 43 apply only to aircraft with an airworthiness certificate; therefore these sections will not apply.

In the absence of regulatory provisions dealing with sUAS operation and Inspections, Petitioner has developed requirements to address these topics, which are contained in Petitioner's sUAS Operations and Training Manual, Inspection Program and Manufacturer's User Guides.

1. Maintenance will be accomplished by Petitioner pursuant to the manufacturer's recommendations and Petitioner's sUAS Operations and Training Manual and Inspection Program.

2. Maintenance, preventive maintenance, rebuilding and alteration will be successfully accomplished by trained personnel only.

3. The Petitioner sUAS Operations and Training Manual details how to enter into the maintenance log all inspections that are performed.

4. Functional test flight will be performed by the PIC when required after inspections, the sUAS shall be returned to service when the flight is successfully completed. If a mechanical issue arises the sUAS can land safely or be recovered within the Operations Area.

5. Petitioner shall only operate its sUAS with all systems functioning per manufacturer's specification in a discrepancy free condition.

6. These records will be maintained at the principle base for operation for the life of the aircraft or as required by Federal Aviation Regulations.

Petitioner and the Aircraft Manufacturer (DJI) are the most familiar with the aircraft and best suited to maintain the aircraft in an airworthy condition.

These maintenance inspections allow for an equivalent level of safety to be achieved due to the limited size, scope and area of operations.

14 CFR 91.417(a) and (b) – Maintenance Records

This section and Part 43 apply only to aircraft with an airworthiness certificate; therefore these sections will not apply.

In the absence of regulatory provisions dealing with sUAS maintenance records, Petitioner has developed requirements to address this topic, which are contained in Petitioner's sUAS Operations and Training Manual, Inspection Program and Manufacturer's User Guides.

1. Maintenance will be accomplished by Petitioner pursuant to the manufacturer's recommendations and Petitioner's sUAS Operations and Training Manual.

2. Maintenance, preventive maintenance, rebuilding and alteration maintenance recordkeeping will be performed by trained personnel and entered in the respective aircraft maintenance log at completion of each event. The Petitioner's sUAS Operations and Training Manual details how entries are to be made in the aircraft maintenance log for scheduled and unscheduled maintenance or functional test flights that are performed.

3. These records will be maintained at the principle base for operation for the life of the aircraft or as required by Federal Aviation Regulations.

Petitioner and the Aircraft Manufacturer (DJI) are the most familiar with the aircraft and best suited to maintain the aircraft in an airworthy condition.

These maintenance records allow for an equivalent level of safety to be achieved due to the limited size, scope and area of operations.

Equivalent Level of Safety

In summary regarding the exemptions requested under 14 C.F.R. §§ 91.405(a), 91.407(a)(1), 91.409(a)(2), and 91.417(a) and (b), an equivalent level of safety will be achieved because maintenance and inspections will be performed in accordance with Petitioner's Operations and Training Manual and Inspection Program section. As provided in the Manual, the operator will insure that the sUAS is in proper working order prior to initiating a flight, perform required maintenance and keep a log on any maintenance performed. The Operator and the Aircraft Manufacturer (DJI) are the most familiar with the aircraft and are best suited to maintain the aircraft in an airworthy condition. If mechanical issues arise, the sUAS can land immediately and will be operating from no higher than 400 feet AGL. Moreover, the sUAS's small size, carrying capacity, and the fact that flight operations will only take place in restricted areas for periods of time not to exceed 25 minutes or until 25% battery power remains, create less risk than the same factors associated with conventional fixed-wing and rotorcraft performing the same operation.

Public Interest

Consistent with the requirements of 14 C.F.R. §§ 11.81(d), Petitioner offers the following reasons why granting this petition is in the public interest, i.e., how granting it would benefit the public as a whole.

Approval of exemptions allowing commercial operations of small and lightweight sUAS in the photography and videography industries benefits the public as a whole in the following ways:

(1) It helps fulfill Congress' goal in passing Section 333 (a) through (c) of the Reform Act, namely, the FAA Administrator's assessment of whether certain sUAS may operate safely in the National Airspace System before completion of the rulemaking required under Section 332 of the Reform Act.

(2) The operation significantly improves safety and reduces risk by alleviating human exposure to danger associated with current aerial survey and inspection, namely, full-sized helicopters. Manned helicopters performing photography or videography have experienced an increasingly high number of accidents and fatalities. Helicopter crashes have taken more lives on film sets than any other type of accident in modern times. Since 1980, 33 film and TV workers have been killed in helicopter accidents around the world, 14 in the U.S. and 15 more for American companies shooting abroad, according to a "Deadline Hollywood" article. The public's interest is furthered by reducing human exposure to death or serious injury associated with manned aircraft performing these services.

(3) Petitioner's uUAS's are battery powered and create no emissions. If Petitioner's sUAS crashes, there is no fuel to ignite or explode. Any impact of Petitioner's lightweight sUAS is, obviously, far less than a full-sized helicopter. The public's interest is furthered by minimizing ecological

impact of an accident and by reducing human exposure to potentially harmful emissions associated with manned aircraft.

(4) Aerial photography and videography are valuable tools for urban projects, real estate and artistic production. The use of sUAS addresses safety problems and is a powerful tool for performing a wide-range of photography and videography that is either inaccessible by traditional aircraft or provides a significant safety benefit. The public as a whole will benefit from the safer and more cost-effective photography and videography services that sUAS operations provide.

Privacy

All flights will occur over private or controlled access property with the property owner's or controlling authority's prior consent and knowledge. Filming will be of people who have also consented to being filmed or otherwise have agreed to be in the area where filming will take place.

Federal Register Summary

Pursuant to 14 C.F.R. Part 11, the following summary is provided for publication in the Federal Register should it be determined that publication is needed:

Petitioner seeks exemption from the following rules:

14 C.F.R. Part 21, Subpart H; 14 C.F.R. Part 27; 14 C.F.R. 45.23(b); 14 C.F.R. § 61.113(a) and (b); 14 C.F.R. 91.7(a); 14 C.F.R. 91.9(b)(2); 14 C.F.R. 91.103; 14 C.F.R. 91.105; 14 C.F.R. 91.109(a); 14 C.F.R. 91.119;14 C.F.R. 91.121; 14 C.F.R. 91.151(a);14 C.F.R. 91.203(a) and (b);14 C.F.R. 91.405(a); 14 C.F.R. 91.407(a)(1); 14 C.F.R. 91.409(a)(2); and 14 C.F.R. 91.417(a) and (b).

Approval of exemptions allowing commercial operations of small and lightweight unmanned aircraft ("sUAS") in the photography and videography industry will enhance safety by reducing risk. Conventional operations in this industry using rotorcraft or fixed-wing aircraft present the risks associated with vehicles that weigh in the neighborhood of several thousand pounds and carry large amounts of fuel. Such aircraft must fly to and from the survey or inspection location and operate at low altitudes. In contrast, a sUAS weighing fewer than 55 pounds and powered by batteries eliminates virtually all of that risk, given the reduced mass and lack of combustible fuel carried onboard. The sUAS is transported, not flown, to the designated imaging area and set up. The sUAS carries no passengers or crew and, therefore, does not expose them to the risks associated with manned aircraft flights.

The operation of small sUAS's, weighing less than 55 pounds, provides an equivalent level of safety and thus supports the grant of the exemptions requested herein, including exempting the Petitioner from the requirements of Part 21 and allowing commercial operations. These lightweight sUAS's operate at low speeds, close to the ground, and in a sterile environment. As a result, they are far safer than conventional aerial photography or videography operations conducted with fixed-wing aircraft or helicopters.

Conclusion

Satisfaction of the criteria provided in Section 333 of the Reform Act:

The size, weight, speed, operating capabilities, proximity to airports and populated areas, and operation within visual line-of-sight provides equivanent levels of safety as required in Part 333. In addition, providing the requested exemptions is in the public interest and creates no threat to national security. Therefore, the Petitioner respectfully requests that the requested exemptions be granted allowing the Petitioner the opportunity to operate sUAS's in the National Airspace System for commercial operations in a safe and professional way.

If any additional information is required, or if you have any questions regarding this petition, please contact the undersigned Petitioner.

Sincerely,

Edward Cooley

Attachments (All Subject to Non-Disclosure under the Freedom of Information Act, 5 U.S.C. § 552 et. Seq.):

Attachments:

(1) DJI Phantom 2 Vision Plus User's Manual
(2) DJI Phantom 3 User's Manual
(3) DJI Phantom Pilot's Training Guide
(4) DJI Phantom 3 Safety Guide
(5) Cooley Drone Services Operations and Training Manual