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

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

July 30, 2015

Exemption No. 12242
Regulatory Docket No. FAA–2015–2038

Mr. Andrew Field
Mr. Christopher Shearer
Owners
Aerial Endeavors
37 Molly Lane
Esko, MN 55733

Dear Messrs. Fields and Shearer:

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 20, 2015, you petitioned the Federal Aviation Administration (FAA) on behalf of Aerial Endeavors (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 is a 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, Aerial Endeavors 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, Aerial Endeavors 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 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 July 31, 2017, unless sooner superseded or rescinded.

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

Enclosures

Aerial Endeavors
Andrew Field, Owner
Christopher Shearer, Owner
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May 20, 2015

U.S. Dept. of Transportation, Docket Operations
West Building Ground Floor, Room wl2-140
1200 New Jersey Avenue, SE
Washington, DC 20590

Re: Exemption Request under Section 333 of the FAA Reform Act and Part 11 of the Federal Aviation Regulations.

Dear Sir or Madam,

Pursuant to Section 333 of the FAA Modernization and Reform Act of 2012 (the "Reform Act") and 14 C.F.R. Part 11 Aerial Endeavors seeks an exemption from Federal Aviation Regulations ("FARs ") detailed below for the following described Unmanned Aircraft System.

THE UNMANNED AIRCRAFT SYSTEM (UAS) DETAILS:

The manufacturer is DJI. It is model Phantom 3 Professional (2.8 lb gross weight fully equipped) battery only operated 4 motor craft in the form of a quadcopter that takes off and lands vertically. It carries the following equipment in flight:

- An on-board flight computer with GPS navigation and location ability that receives signals for flight controls from a ground-based transmitter/controller.
- An on-board camera capable of capturing images in the form of full color, 4K definition still photos and videos.
- It is equipped to send flight data from the on-board flight computer to the on-board radio transmitter including altitude AGL, horizontal and vertical speed, compass direction of flight and direction back to its launch site.
- A 2.483 GHz on-board radio transmitter that transmits live video from the on- board camera plus all the flight data from the telemetry system described above.

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The Unmanned Aircraft System will be operated in the field with a PIC in accordance with FAA Policy N 8900.227 Section 14 "Operational Requirements for UAS".

Aerial Endeavors respectfully requests the grant of exemption allowing us to operate lightweight, remote controlled UAS's lawfully and safely.

Aerial Endeavors also respectfully requests Exemption Request Section 333 from (but not limited to) the Specific Sections of Title 14 of the Code of Federal Regulations and part 11 of the Federal Aviation. Regulations listed below.

14 C.F.R. 45.23(b); 14 CFR Part 21; 14 CFR 61.113 (a) & (b); 91.7 (a); 91.9 (b) (2); 91.103(b);

91.109; 91.119; 91.121; 91.151(a); 91.203(a) & (b); 91.405 (a); 91.407(a) (1); 91.409 (a) (2);

91.417 (a) & (b)

The extent of relief Aerial Endeavors seeks and the reason why:

Aerial Endeavors is seeking relief from any applicable FARs operating to prevent Aerial Endeavors from conducting low level aerial shots of real estate and other possible legal flight operations. The weight of the UAS meets the definition of "small unmanned aircraft" found in section 331 of "The Reform Act". Aerial Endeavors seeks to operate legally as a small business that caters to real estate agents. Realtors are not allowed to use UAS's or hire unless they, or the person they hire, is allowed by the FAA to fly a UAS. Aerial Endeavors would satisfy the need for safe and affordable aerial shots.

At less than 3 pounds, Aerial Endeavors uses a UAS that is considerably less than 55 pounds including the camera that is attached. The UAS will be used at speeds under 30mph because of the nature of the business and the limited physical capabilities of the UAS. It is designed to hover and take pictures. The UAS will be in accordance with flying below 200ft.

The UAS, in which Aerial Endeavors would be using, only utilizes battery power for its operations. There are no combustible fuels used in the UAS that Aerial Endeavors uses. The maximum flight time for our particular UAS is 23 minutes battery life. It will fly no more than 20 minutes maximum at one time at one location. The amount of time the UAS will be in the air, under 200ft, is very minimal.

A Safety system in place for Aerial Endeavors UAS includes a GPS mode that allows the UAS to hover in place if communication is lost. Further, the GPS onboard allows the UAS to return back to its launched position if the battery life of the UAS is low.

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THE GROUND STATION PART OF THE SYSTEM:

- A Pilot in Command (PIC) in operational control of flight operation from beginning to end and who controls the UAS while in the air. Additionally, the line of site of the UAS will not leave the sight of the PIC.
- A 2.483 GHz radio transmitter/controller operated by the PIC to control the UAS while in flight;
- A radio receiver receiving live video and flight data from the on-board camera and computer. It projects it all in one screen to the Pilot in Command.

The UAS, weighing less than 3lbs fully loaded, is powered by batteries and operates with no people on board, which lower the likelihood of death or serious bodily injury. With a small payload consisting of electronics such as a camera and GPS, the UAS's only purpose is to be used as a tool to take pictures and videos.

Low level aerial photos and video from several angles are far more effective than ground based photos. Low level aerial video and pictures show the layout of properties with the advantage of seeing more in one photo or short video.

Current applicants have chartered helicopters and small planes for this purpose. The cost of fuel, time, and emissions of such aircraft (helicopters and planes) is not efficient enough for most customers to afford.

The benefits of reduced cost and improved efficiency of the UAS allows future customers to afford this service with a faster turnaround time at a lesser cost.

Additionally we respectfully request that Aerial Endeavors be allowed to use the UAS to benefit possible first responders in my area for actions that could benefit the public. Such as, forest fires and/or search and rescue.

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Aerial Endeavors will not operate a UAS near airports and generally does not fly over crowds. Situational awareness is important. The areas where Aerial Endeavors conducts aerial photography is predetermined which allows for a controlled environment to operate safely. With allowing Aerial Endeavors to conduct business with a light weight UAS, it will help the economy and benefit people in first response situations. Further, Aerial Endeavors' UAS is considerably lighter than the alternative, which is a helicopter or small plane. Currently, Aerial Endeavors has only one UAS which only operates off 23 minutes of battery power. Therefore, the UAS used by Aerial Endeavors would only have a flight time of 5 - 20 minutes at one time. The likelihood of injury or even death with such a small unmanned aircraft, compared to an aircraft flown by a person loaded with combustible fuel, is considerably low.

SUMMARY:

Aerial Endeavors will follow the safety guidelines of the FAA Policy N 8900.227 Section 14 "Operational Requirements for UAS" with the appropriate exemptions for flying a small UAS.

(a) No flight will be made with a UA Gross weight exceeding 55 pounds;

(b) All operations must occur in FAA Class G airspace at no more than 200 ft. AGL, at an airspeed of no more than 25 knots and no further than 3/4 NM from the Pilot In Charge;

(c) Operations will be restricted to flights over private property with the permission of the property owner;

(d) All required permits will be obtained from state and local government prior to operation;

(e) The UAS will not be operated over densely populated areas;

(f) The UAS will not be operated at air shows;

(g) The UAS will not be operated over any open-air assembly of people;

(h) The UAS will not be operated over heavily trafficked roads;

(i) The UAS will not be operated within 5 NM of an airport or heliport;

(j) Operations will be restricted to day only and weather conditions equivalent to VFR;

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(k) The PIC will brief the property owner about the operation and risk before the first flight at each new location;

(l) No flight may be made without a Pre-Flight Inspection by the PIC before each operation to ascertain that the UAS is in a condition safe for flight.

My operations above, [(a) through (l)], are the bare minimum safety requirements Aerial Endeavors will follow. Aerial Endeavors is also more than willing to follow any additional safety requirements if not listed above.

As stated by President Barak Obama in his recent memorandum for the heads of executive departments and agencies concerning a UAS, published on February 15, 2015. "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". Aerial Endeavors believes flying its UAS as a small business within the safety parameters of the FAA, can help people and promote the economy.

The name and contact information of the applicant is:

Aerial Endeavors

Attn: Andrew Field and Christopher Shearer

Phone: 218-428-4444

Email: fieldak@yahoo.com

We understand safety is paramount in dealing with the airspace and people. Please contact us at any time if any additional information is needed or any questions need to be answered.

Aerial Endeavors respectfully requests that the FAA grant its exemption request without delay. I do look forward to working with you. Thank you for your time.

Aerial Endeavors
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Respectfully,

Andrew Field, Owner

Aerial Endeavors

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