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

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

August 5, 2015

Exemption No. 12357
Regulatory Docket No. FAA–2015-1124

Mr. Christopher D. Fink
President
Unmanned Vehicles Technologies, LLC
151 North Maitland Avenue
No. 948595
Maitland, FL 32751

Dear Mr. Fink:

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 April 15, 2015, you petitioned the Federal Aviation Administration (FAA) on behalf of Unmanned Vehicle Technologies, LLC (hereinafter petitioner or operator) for an exemption. The petitioner requested to operate an unmanned aircraft system (UAS) to conduct aerial photography, videography, and inspections.

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 S1000 Premium.

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, Unmanned Vehicle Technologies, LLC 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, Unmanned Vehicle Technologies, LLC 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 S1000 Premium 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

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APRIL 15, 2015

US Department of Transportation
Docket Management System
1200 New Jersey Avenue SE
Washington, DC 20590

RE: Exemption Request under Section 333 of the FAA Modernization and Reform Act of 2012 and 14 C.F.R. Part 11

Dear Sir or Madam,

Unmanned Vehicle Technologies, LLC (UVT) requests exemption from several provisions of the Federal Aviation Regulations (FAR) in accordance with Section 333 of the FAA Modernization and Reform Act of 2012. UVT seeks exemption in order to commercially operate small unmanned aerial vehicles (UAVs)/ small unmanned aerial systems (UAS) weighing less than 55lbs for the purposes of:

- Aerial photography
- Aerial videography
- Inspection

All of UVT's Pilots in Command (PICs) hold active sport pilot certifications or higher and all either carry a Third Class Medical Certificate or possess a valid driver's license. All of UVT's PICs and Visual Observers (VOs) undergo rigorous training and continued education for the specific aircraft which they pilot/operate/observe. Following UVT policy, all PICs and VOs must maintain detailed flight logs, which are submitted to UVT Senior Management monthly for review, approval and filing.

The name and address of the petitioner is:

Unmanned Vehicle Technologies, LLC
Attn: Christopher D. Fink / President
151 N Maitland Avenue
No. 948595
Maitland, FL 32751
(407) 218-6355

Description of Flight Operations

To preserve the safety of manned aircraft operations, the NAS, and property, UVT will maintain the following limitations and conditions during all operations:

1. All UAVs operated by UVT under the requested Section 333 exemption will weigh less than 55 pounds.
    a. In most cases, the UAVs will weigh less than four (4) pounds.
2. All UAVs operated by UVT under the requested Section 333 exemption will have on-board GPS systems, preprogrammed with an altitude ceiling of 400 feet; additionally, a maximum lateral distance of 500 feet will be programmed into each aircraft's flight controller.
3. All flights will be conducted within visual line of sight by the Pilot in Command and Visual Observer.
4. All flights will be conducted with a limitation on the minimum voltage allowed in the primary flight battery.
    a. Preprogrammed voltage limitations are built-in to each aircraft, allowing first for a visual warning to the PIC and VO, and second for the autonomous descent and landing of the aircraft.
5. At all times during the flight, the active PIC and VO will be able to communicate verbally.
6. All flights will be conducted in visual flight rules (VFR) conditions.
7. All flights will be conducted in daylight; UVT has a strict "No Night Flight" policy for all aircraft.

UVT requests the following exemptions under Section 333:

Part 21 Subpart H	*Airworthiness certification*
14 C.F.R. § 45.23(b)	*Markings*
14 C.F.R. § 61.113(a) and (b)	*Private pilot privileges*
14 C.F.R. § 61.133(a)	*Commercial pilot privileges*
14 C.F.R. § 91.7(a) and (b)	*Civil aircraft airworthiness*
14 C.F.R. § 91.119	*Minimum safe altitudes*
14 C.F.R. § 91.121	*Altimeter settings*
14 C.F.R. § 91.151(a)	*Fuel requirements for flight in VFR conditions*
14 C.F.R. § 91.203(a)(1) and(2)	*Civil aircraft certifications*
14 C.F.R. § 91.405; 407; 409; 417	*Maintenance inspections*

Part 21 Subpart H: *Airworthiness certification*

Part 21 Subpart H prescribes procedural requirements for the issue of airworthiness certificates. UVT requests exemption from this subpart to operate small UAVs (less than 55lbs) without the requirement for an airworthiness certificate. Based on the proposed small UAVs being limited in size, weight, speed, operating capabilities, and operating within visual line of sight, UVT believes that an airworthiness certificate is not necessary to ensure an equivalent level of safety to manned aircraft operations.

14 C.F.R. § 45.23(b): *Display of marks; general*

As the proposed small UAVs do not have any entrances to the cockpit or cabin, UVT requests that in order to identify the aircraft as an experimental type, the word "EXPERIMENTAL" will be displayed in two (2) inch lettering on the fuselage of each aircraft.

14 C.F.R. § 61.113(a) and (b): *Private pilot privileges and limitations: Pilot in command*

UVT requests exemption from 14 C.F.R. § 61.113(a) and (b) to allow UVT to commercially operate small UAVs with operators holding private pilot certificates. Sections 61.113(a) and (b) limit private pilots to non-commercial operations. However, provided in recent documentation, it has been determined that private pilot and commercial pilot certifications meet the same basic knowledge of airspace through ground school and not flight training (See Regulatory Docket No. FAA-2014-0352, pages 16-17). A commercial pilot's certification ensures that a pilot is able to safely commercially operate a manned aircraft, not a

small UAV. Applying manned commercial pilot certification requirements does not significantly add to the safety of UAS operations. UVT's operating procedures will ensure our Pilots in Command and VOs are trained to conduct operations with an equivalent level of safety to the training advantages obtained by a commercial pilot certification for manned aircraft.

14 C.F.R. § 91.7(a) and (b): *Civil aircraft airworthiness*

The regulation requires that no person may operate a civil aircraft unless it is in airworthy condition. As there will be no airworthiness certificates issued for small UAVs, should this exemption be granted, no FAA regulatory standard will exist for airworthiness. Given the small size of our aircraft (weighing less than 55 pounds) and the aforementioned description of flight operations, an equivalent level of safety will be provided.

14 C.F.R. § 91.119: *Minimum safe altitudes*

UVT requests exemption from the minimum safe altitude requirements of 14 C.F.R. § 91.119 that prescribes the minimum safe altitudes under which aircraft may operate:

- Over any congested area of a city, town, or settlement, or over any open air assembly of persons, an altitude of 1,000 feet above the highest obstacle within a horizontal radius of 2,000 feet of the aircraft.
- Over other than congested areas at 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.

To provide the intended operations, our small UAVs will be operated below 400 feet. Additionally, the small UAVs will maintain a maximum lateral distance of 500 feet from inhabited structures, buildings and vehicles, and will remain within visual line of sight of the PIC and VO at all times.

14 C.F.R. § 91.121: *Altimeter settings*

This regulation requires that each person operating an aircraft shall maintain the cruising altitude or flight level of that aircraft, as the case may be, by reference to "the current reported altimeter settings of a station along the route within 100 nautical miles of the aircraft."

UVT requests exemption from this section because our small UAVs do not have barometric altimeters on-board, but rather GPS-based altitude readouts. All aircraft will be programmed to remain below 400 feet regardless of the input of the PIC, thus ensuring operation at safe altitudes.

14 C.F.R. § 91.151(a): *Fuel requirements for flight in VFR conditions*

UVT requests an exemption from 14 C.F.R. § 91.151(a)'s fuel requirements for flight in VFR conditions. Section 91.151 states:

- No person may begin a flight in an 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 –
    - During the day, to fly after that for at least 25 minutes;
    - At night, to fly after that for at least 45 minutes.

The batteries powering our small UAVs provide approximately 10-18 minutes of flight time. All flight operations will be limited to a minimum voltage to ensure appropriate reserve battery to maintain an equivalent level of safety at all times. Should the PIC fail to land the aircraft prior to the minimum voltage warning, the aircraft will autonomously return to its home point and land.

14 C.F.R. § 91.203(a)(1) and (2): *Civil aircraft: Certifications required*

Under the requested exemption, UVT would not be operating aircraft with an airworthiness certificate as requested under the exemption for Part 21 Subpart H. The exemption for this section is required as UVT would not be able to display the airworthiness certificate in accordance with 14 C.F.R. § 91.203(a)(1) and (2).

14 C.F.R. § 91.405; 91.407; 91.409; 91.417: *Maintenance/Operations/Inspections/Records*

These regulations specify maintenance and inspection standards in reference to 14 C.F.R. Part 43. 14 C.F.R. 91.405(a) (stating that each owner or operator of an aircraft "shall have the aircraft inspected as prescribed in subpart E of this part and shall between required inspections…have discrepancies repaired as prescribed in part 43 of this chapter").

UVT requests exemption from these sections as these sections require the aircraft be inspected in accordance with Part 43 and is needed as these sections apply only to aircraft with an airworthiness certificate. An equivalent level of safety will be achieved by the PIC following standard maintenance procedures, per the aircraft manufacturer's User Manual and all maintenance and repairs are logged for each aircraft, with those logs being submitted to UVT Senior Management following each maintenance and repair. Additionally, the PIC will ensure the aircraft is in working order prior to each flight.

Why is this exemption request in the public's best interest?

By granting this exemption request, UVT will be able to safely commercially operate our small UAVs in the NAS allowing for aerial photography, aerial videography and perhaps most importantly, inspection. The safe and responsible utilization of this technology allows us to minimize the risk placed on the human life, not only potentially saving a life, but freeing up valuable human resources to be used to further innovate and create.

UVT feels these exemptions play an integral part of the early adoption of small UAS into the NAS. It is review processes like these that allow those of us operating responsibly and safely to use this technology to protect our people, protect our property and help improve countless industries and lives, worldwide.