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

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

August 20, 2015

Exemption No. 12540
Regulatory Docket No. FAA−2015−1636

Ms. Heather Graham Davis
Bird's Eye View Consulting
227 8th Street
Petaluma, CA 94952

Dear Ms. Davis:

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 posted to the public docket on May 13, 2015, you petitioned the Federal Aviation Administration (FAA) on behalf of Bird's Eye View Consulting (hereinafter petitioner or operator) for an exemption. The petitioner requested to operate an unmanned aircraft system (UAS) to conduct aerial photography and videography for ecological, biological, and geographical purposes.

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 Inspire.

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, Bird's Eye View Consulting 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)

[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.

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.

Conditions and Limitations

In this grant of exemption, Bird's Eye View Consulting 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 Inspire 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

Petition for Exemption to Operate Unmanned Aircraft in the National Airspace System Under Section 333 of the FAA Modernization and Reform Act of 2012

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Summary: Bird's Eye View Consulting, an Ecological consulting company seeks an exemption to grant relief from 14 CFR part 21, Certification procedures for products and parts, Subpart H – Airworthiness Certificates. We propose to use UAS for image/video production to provide scientific surveys and analyses for ecological, biological and geographical purposes.

Regarding the Unmanned Aircraft System

1. *How the proposed UAS operation will be safely conducted to minimize risk to the NAS or to persons and property on the ground.*

   We intend to use a DJI Quadcopter Inspire. Includes the Aircraft, Gimbal, Camera, Remote Control, Battery

   a. Summary of Design and Operational Characteristics
      i. Size: 438x451x301 mm
      ii. Weight: 2935 g
      iii. Speed:
         1. Max Ascent Speed: 5 m/s
         2. Max Descent Speed: 4 m/s
         3. Max Speed: 22 m/s no wind
      iv. Operating Area: Limited to Visual Line of Sight in ecological survey areas (see *Regarding the Operation of Unmanned Aircraft*)

   b. DJI Inspire Aircraft Specs
      i. Model: T600
      ii. Weight (battery included): 2935 g
      iii. Hovering Accuracy: Vertical 0.5 m, Horizontal 2.5 m
      iv. Max Angular Velocity: Pitch 300 deg/s, Yaw 150 deg/sec
      v. Max Tilt Angle: 35 deg
      vi. Max Ascent Speed: 5 m/s
      vii. Max Descent Speed: 4 m/s
      viii. Max Speed: 22 m/s no wind
      ix. Max Flight Altitude: 4500 m

x. Max Wind Speed Resistance: 10 m/s
xi. Max Flight Time: Approx. 18 minutes
xii. Motor Model: DJI 3510
xiii. Propeller Model: DJI 1345
xiv. Operating Temperature Range: -10 to 40 deg C
xv. Diagonal Distance: 559 to 581 mm
xvi. Dimensions 438x451x301 mm

2. *Procedures to be implemented to ensure the UAS is in a condition for safe flight*

    a. Operating Procedures
        i. The PIC will be thoroughly familiar with the aircraft and interface
        ii. The PIC will use pre-flight checklists to ensure the UAS is airworthy and does not pose a threat to persons or property on the ground or in the air
        iii. The PIC will ensure the UAS is maintained, and repaired if necessary, to ensure the aircraft is in a condition for safe flight
        iv. The PIC will ensure instruments read correctly (ie altimeter).
        v. The PIC will continually assess terrain and avoid potential obstacles/hazards in the area of operation
        vi. The PIC will assess weather to ensure the UAS is airborne only with minimums of 3 SM visibility while remaining clear of clouds in Class G Airspace (or required minimum clearances in other Airspace classes)
        vii. The PIC will immediately avoid and give right of way to any manned aircraft
        viii. The PIC will keep the UAS at no greater altitude than 200 feet AGL and always within line of sight.

3. *Radio Frequency Spectrum (Remote Controller only transmitting equipment)*

    a. Operating Frequency of Remote Controller: 5.725-5.825 GHz, 2.400-2.483 GHz
    b. Complies with the Federal Communications Commission requirements

Regarding the Unmanned Aircraft PIC

4. *Qualifications of PIC*

    a. All UAS operations will be conducted by Heather Graham Davis
        i. Sport Pilot
        ii. Certificate # 3787382
        iii. Trained in the use of UAS by MLB Company (UAS supplier to U.S. Dept. of Defense/contractor with NASA, U.S. Dept. of Agriculture, etc.)

5. *Medical standards and certification of PIC:* not required under Sport Pilot License

Regarding the Operation of the Unmanned Aircraft

6. *Description of UAS Operations*

    a. We propose to use UAS for image/video production to provide scientific surveys and analyses for ecological, biological and geographical purposes. Services that we will provide include:
        i. Wildlife surveys – (i.e. migratory waterfowl population assesments, surveying for hazards to protected birds)
        ii. Botanical surveys (invasive or rare species, i.e. pepperweed, vernal pool or serpentine species occurrence and extent)
        iii. Agricultural surveys (i.e. looking for disease, evidence for sharpshooter damage)
        iv. Geomorphological surveys – (i.e. riverbeds, fluvial connections)
        v. Hydrological surveys – (i.e. water levels of reservoirs)
        vi. UAS aerial inspections in dangerous/difficult to access situations, such as nest surveys
    b. Safety
        i. Many of the above actions are currently conducted using traditional aerial surveying in fixed wing aircraft. This is inherently hazardous as it often entails flying close to terrain or over water at low altitudes (i.e. surveying migratory waterfowl). We propose to increase safety by providing aerial imagery and so dispense with the necessity of placing pilots and staff in dangerous conditions.
        ii. There will be very low risk to people or property as operations will be conducted in un- or sparsely populated areas such as marshes, protected wildlands or agricultural lands. The PIC will ensure that the UAS cannot come in contact with bystanders in the event of a malfunction.

7. *Proposed Operating Conditions*

    a. Maximum Operating Speeds:
        1. Max Ascent Speed: 5 m/s
        2. Max Descent Speed: 4 m/s
        3. Max Speed: 22 m/s no wind
    b. Maximum Altitude: 200 feet AGL
    c. Minimum Flight Visibility and Distance of Clouds proposed as the same VFR rules as under the PIC sport pilot's license. 3 SM visibility in all situations. Clear of clouds in Class G Airspace (and in the unlikely event of operating in Class B Airspace). In C, D & E Airspace, will be at least 500 feet below and 2000 feet horizontal (vertical distance above clouds

does not apply since UAS will go no higher than 200 feet over the ground).

d. Potential Hazards: We do not anticipate significant hazards to the operator or bystanders, but some hazards to the UAS and property may be present. The likeliest of these are collisions with powerlines and trees. The PIC will thoroughly assess an area of operation to identify obstacles. Since the UAS will be kept within VLOS, visual scanning should be sufficient.

8. *Characteristics of the Area of Intended Operations*

    a. The proposed areas of operations will be un- or sparsely populated areas. Some manmade obstacles will be present such as powerlines and towers of various kinds.

9. *Proximity to Airports*: We do not intend to operate in close proximity to any airport.

10. *VLOS:* The PIC will be ground-based and will not allow the UAS to fly out of sight at any time.

11. *Procedures for preflight:*

    a. Weather conditions suitable
    b. No bystanders or property at risk in area of operation
    c. Operations free to perform in Airspace (contact tower if necessary)
    d. No TFRs
    e. Frame and all screws are tight.
    f. Propellers not damaged and tightly fixed.
    g. Battery fully charged and securely mounted.
    h. Transmitter battery charged and the antennas are free.
    i. Channel of the transmitter is not busy.
    j. Check RC operation range on the ground
    k. Ensure there is nothing in the danger zone of the propellers.
    l. Ensure enough space for launch and flight.
    m. Ensure the GPS module has GPS fix.
    n. Ensure sensors are calibrated and that the right setting is loaded.

12. *FSDOs* – We do not intend to conduct operations with existing requirements necessitating contacting a Flight Standards District Office

13. *COA* – We will comply with the requirement to obtain a Certificate of Waiver or Authorization from the FAA Air Traffic Organization prior to conduction operations in the NAS.