



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

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

August 6, 2015

Exemption No. 12361  
Regulatory Docket No. FAA-2015-1036

Mr. Scott T. Tabor  
CEO  
Photo Flight LLC  
2044 Utley Road, Suite 1  
Flint, MI 48532

Dear Mr. Tabor:

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 9, 2015, you petitioned the Federal Aviation Administration (FAA) on behalf of Photo Flight LLC (hereinafter petitioner or operator) for an exemption. The petitioner requested to operate an unmanned aircraft system (UAS) to conduct aerial data capture.

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 Plus, DJI Inspire 1, and BLADE 350 QX3 AP.

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<sup>1</sup>. 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 Astraesus 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, Photo Flight 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.

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<sup>1</sup> 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, Photo Flight 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 Phantom Vision Plus, DJI Inspire 1, and BLADE 350 QX3 AP 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.nts.gov](http://www.nts.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





Photo Flight LLC  
2044 Utley Rd – Suite 1  
Flint, MI 48532

**(810) 309-9160**

April 9, 2015

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

Re: Exemption Request Section 333 of the FAA Reform Act

Dear Sir/Madam,

This petition is being submitted on our own behalf without legal counsel or consulting services. Pursuant to Section 333 of the FAA Modernization and Reform Act of 2012 (the Reform Act), and 14 C.F.R. Part 11, Photo Flight LLC, a Michigan based limited liability company operating a Small Unmanned Aircraft System (sUAS) equipped to conduct aerial photography and survey for various industries, hereby applies for an exemption from the Federal Aviation Regulations (FARs) listed below to allow operation of our sUAS commercially in airspace regulated by the Federal Aviation Administration (FAA) so long as such operations are conducted with and under the conditions outlined herein or as may be established by the FAA as required by Section 333.

The requested exemption would permit Photo Flight LLC to pursue its commercial interests in providing services to consumers interested aerial data capture using small advanced sUAS in the following areas:

- Real Estate Photography
- Agricultural Surveying
- Special Events Photography

Photo Flight LLC states that all sUAS flights will occur over private or controlled access property and will only do so with the property owner's prior consent and knowledge and not before a thorough inspection and survey of the property.

Photo Flight LLC sUAS operators have completed a minimum of 80 hours of flight and training including at least 40 hours indoor flight training regarding safety, maintenance, calibrations, maneuvering and controls with an additional 40 hours minimum of outdoor flight training and practice before being permitted to fly commercially. All sUAS operators must pass a physical and be in good sound medical and mental health.

Photo Flight LLC is requesting exemption from the following regulations:

- 14 C.F.R. Part 21
- 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. 91.109
- 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) & (b)
- 14 C.F.R. 91.205 (b)
- 14 C.F.R. 91.215
- 14 C.F.R. (91.401 - 91.417)

### Unmanned Aircraft System

sUAS are a feasible method to obtain information of agricultural cropland to determine optimum inputs that result in cost savings to farmers, yield security, and reduce environmental impact of excess fertilizers and chemicals in the soil. Additionally Aerial Real Estate Photography is growing in popularity and is a chosen method for highlighting and showing overviews of property for potential sale.

We are petitioning for exemption to enable Photo Flight LLC to operate a DJI Phantom 2 Vision Plus multi-rotor equipped with a three-axis gimbaled camera, a DJI Inspire 1 multi-rotor equipped with a three-axis gimbaled camera, and a BLADE 350 QX3 AP multi-rotor equipped with a three-axis gimbaled camera. These sUAS all weigh less than 25 lbs., have a built-in capability to limit the height it flies above the ground and to limit the radius of the distance it flies from the operator. Each system also has the failsafe function of the autopilot Return Home feature. This feature can be activated manually by the sUAV operator and is activated automatically if communication between the Main Controller and the transmitter is lost. Once activated either manually or by a transmitter communication error, the system will automatically trigger Return to Home and the sUAS will land safely near the GPS coordinates in which it raised from.

Safety is of the top most concern at Photo Flight LLC. We have implemented policy and procedures to ensure safe operations. The following are some of the basic safety rules and procedures in place:

- All sUAS equipment has firmware coded flight restrictions limiting above ground flight to 115 meters (approximately 377 feet) above ground and 200 meters (approximately 656 feet) Geo Fence restricting the sUAS to travel no further than 200 meters from the sUAS operator.
- Once a week Accelerometer and Pressure sensor calibrations will be done in a controlled environment.
- Once a month calibrations will be monitored through diagnostics software and firmware's verified and updated if necessary.
- Any updated firmware will be fully tested in a controlled environment for at least 1 hour worth of flight time before being flown commercially.
- No flights will be permitted after 30 minutes before sunset and sUAS will never be flown in the path of any aircraft.
- Before each flight a compass calibration will be done on site along with preflight mechanical inspections including battery levels in the sUAS and transmitter.

- Before each flight a property survey will be done checking for power lines, antennas, trees, and any overhead objects. Wind conditions will be monitored and also be factored before flying.
- Only a fully charged and balanced battery is to be used at each take off.
- While in flight either the sUAS operator or secondary visual observer must be able to see the indicator LED light affixed to the sUAS.
- No flight will ever exceed 8 minutes. At the beginning of each flight a timer will be activated. At 7 minutes the timer will go off alerting the sUAS operator to begin to land. If a battery alert is indicated on the always visible LED prior to the 7 minute timer expiration the sUAS is to be landed immediately and the battery recycled or discarded safely as it proved to be defective.

The above specifications and safety precautions meet and exceed standards listed below, some derived in accordance with the Model Aircraft Operating Standards:

- The petitioner will only operate its sUAS in line of sight of the sUAS operator and secondary visual observer and will operate at sites that are a 'sufficient distance' from populated areas within the sterile area described in the operator's manual. Such operations will insure that the sUAS will "not create a hazard to users of the national airspace system or the public."
- Maximum flight time for each operational flight will be 8 minutes.
- Flights will be terminated at 25% battery power reserve should that occur prior to the 8 minute limit.
- The sUAV will be programmed so that it will be operated at an altitude of no more than 378 feet AGL.
- Minimum crew for each operation will consist of the sUAS Operator and a second Visual Observer. At no time will the sUAS pilot or the secondary observer be out of line of sight from the sUAS.
- The sUAS operated by the petitioner weighs less than 25 pounds, including the payload (i.e. camera, lens, and gimbal).
- The sUAS will operate at speeds of no more than 55 knots.
- Given the small size of the sUAS and the restricted sterile environment within which they will operate, our sUAS operations adhere to the Reform Act's safety requirements.

We respectfully request exemption under Section 333 to enable Photo Flight LLC to operate safe, low-risk commercial sUAV operations for the activities stated. Photo Flight LLC at all times will respect the space and privacy of citizens and property while keeping our skies safe.

Sincerely,



Scott T. Tabor  
 CEO / Photo Flight LLC  
 2044 UTLEY RD SUITE 1  
 Flint, MI 48532  
 (810) 309-9160