



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

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

April 20, 2015

Exemption No. 11384
Regulatory Docket No. FAA-2014-1006

Mr. Tippon Chandler Weiss
AirCam Photography
798 Lighthouse Avenue #232
Monterey, CA 93940

Dear Mr. Weiss:

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.

The Basis for Our Decision

By letter dated December 2, 2014, you petitioned the Federal Aviation Administration (FAA) on behalf of AirCam Photography (hereinafter petitioner or operator) for an exemption. The exemption would allow the petitioner to operate an unmanned aircraft system (UAS) to conduct commercial applications such as professional marketing, produce field management, inspections, real estate, construction, and events.

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 2, DJI S900, and DJI Inspire 1.

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. 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, AirCam Photography 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.

Conditions and Limitations

In this grant of exemption, AirCam Photography 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 2, DJI S900, and DJI Inspire 1 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.

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 April 30, 2017, unless sooner superseded or rescinded.

Sincerely,

/s/

John S. Duncan

Director, Flight Standards Service

*Please note, there was a decision inserted in my docket that doesn't belong there. This response is from:

AirCam Photography
Tippon Chandler Weiss
798 Lighthouse #232
Monterey, Ca 93940

This is a follow up to my petition for exemption posted to the public docket on December 2, 2014, Docket No. FAA-2014-1006 in your request for more information to comply with the requirements of §11.81 for your consideration.

Specific section or sections of 14 CFR from which I seek relief and the reason I seek relief:

Part 21; and

§§ 45.23(b);

91.7(a); 91.9(b)(2); 91.103(b);

91.119; 91.121, 91.151(a);

91.203(a) & (b); 91.405(a); 91.407(a)(1);

91.409(a)(2); and 91.417(a) & (b) of

Title 14, Code of Federal Regulations

Part 21 91.203(a) & (b)

Given the size, weight, speed, and limited operating area associated with the aircraft to be utilized by him, an exemption from 14 CFR part 21, Subpart H (Airworthiness Certificates) subject to certain conditions and limitations, is warranted and meets the requirements for an equivalent level of safety under 14 CFR part 11 and Section 333 of P.L. 112-95 (Section 333).

45.23

Marking of the aircraft because UA will not have a cabin, cockpit or pilot station on which to mark certain words or phrases. Further, two-inch lettering is difficult to place on such a small aircraft with dimensions smaller than the minimal lettering requirement.

Will mark UAS in the largest possible lettering by placing the word "experimental" on its fuselage as required by § 45.29(f) so that anyone assisting him as a spotter will see the markings.

91.405(a), 91.407(a)(1), 91.409(a)(2) and 91.417(a) and (b)

Maintenance inspections may be required and should be granted since they only apply to aircraft with an airworthiness certificate. However as a safety precaution user will perform a preflight inspection of his UAS before each flight as outlined in his operating documents and follow manufacture maintenance recommendations as stated in UA user manual.

91.7(a)

prohibits the operation of an aircraft without an airworthiness certificate.

There is currently no certificate applicable to this operation, this regulation is inapplicable.

91.9(b)(2)

requires an aircraft flight manual in the aircraft, however since there are no pilots or passengers on board his aircraft and given its size, this regulation is inapplicable. An equivalent level of safety will be achieved by maintaining a safety/flight manual with the UAS ground station.

91.103(b)

The PIC will take all actions including reviewing weather, flight battery requirements, landings, and takeoff distances and aircraft performance data before initiation of flight.

Stricter requirements with regard to visibility and distance from clouds; this is to both keep the UA from departing the VLOS and to preclude the UA from operating in the NAS. Sun glare will be taken into account. PIC's and VO's ability to still see other air traffic, combined with the PIC's ability to initiate a return-to-home sequence, are sufficient mitigations. The PIC will also account for all relevant site-specific conditions in his or her preflight procedures.

91.119

Prescribes safe altitudes for the operation of civil aircraft, but that it allows helicopters to be operated at lower altitudes in certain conditions. UAS will not be operated above the altitude of 400 feet above ground level (AGL) and will also only operate in safe areas away from the public and traffic, thus "providing a level of safety at least equivalent to or below those in relation to minimum safe altitudes." Given the size, weight, maneuverability, and speed of the UAS, an equivalent or higher level of safety will be achieved.

91.121

Altimeter settings is inapplicable since the UAS utilizes electronic GPS with a barometric sensor. Sensor is calibrated before flight and reads AGL altitudes.

91.151 (a)

Fuel requirements for flight in VFR conditions, prior relief has been granted for manned aircraft to operate at less than prescribed minimums, including Exemption Nos. 2689, 5745, and 10650. In addition, similar UAS-specific relief has been granted in Exemption Nos. 8811, 10808, and 10673 for daytime, VFR conditions. The UAS will land prior to the manufacturer's recommended minimum level of battery power (30%). The operating documents indicate that the low battery level failsafe is triggered when the battery is depleted to a point that may affect the safe return of the aircraft. Users are to return home or land the aircraft immediately when these warnings are shown. Pilot ground station will advise user to return the aircraft to the Home Point when low battery warning is triggered. Aircraft will automatically return to home point if no action is taken after 10 second countdown. User can cancel the return to home any time. The thresholds for these warnings are automatically determined based on the current aircraft altitude and its distance from home point.

Aircraft will land automatically if the current battery level can only support the aircraft to land to the ground from the current altitude. User can use ground station to control the aircraft during landing process.

How my request will benefit the public as a whole:

I would gladly offer my services upon request and with proper coordination and appropriateness to any official search and rescue or emergency services organization to benefit the public. Agricultural and crop inspection could substantially decrease water usage and increase efficiency in the industry by identifying troubled areas and waste. This would greatly benefit the public as we have been in a water drought on the West Coast for the last three years. Aerial videography for geographical awareness, agricultural applications, and marketing has been around for a long time through manned fixed wing aircraft and helicopters. Although they have been operated in an extremely safe manner, my UASs pose much less risk since the small size and lack of combustible fuel greatly reduces the potential threat to the public. Congress has already proclaimed that it is in the public's interest to integrate commercially flown UAS's into the national airspace system, hence the passing of the Reform Act. Granting AirCam Photography's exemption request furthers the public interest through academic/visual awareness of the geographical benefits in and around the Monterey Bay area. My light weight UAS is battery powered and creates no emissions that can harm the environment. The consequence of my light weight UAS

crashing is far less than a full size helicopter or fixed wing aircraft; which are heavy, contain combustible fuel and can cause catastrophic devastation to the public.

The public's interest is furthered by minimizing ecological and crash threat by permitting aerial video/photo capture through my battery operated light weight UAS's.

The reasons why the exemption would not adversely affect safety or how the exemption would provide a level of safety at least equal to existing rule:

My, Tippon Chandler Weiss's, exemption will not adversely affect safety. Quite the contrary, for the reasons stated permitting me, Tippon Chandler Weiss, to log more flight time in FAA controlled airspace will allow me to contribute to the innovation and implementation of new and novel, as of yet undiscovered safety protocols for UAS operators.

- I generally operate my UAS below 200 feet AGL (well within the 400 foot permissible ceiling set by the FAA Modernization and Reform Act of 2012)
- I don't operate within 5 miles of an airport unless prior contact to Air Traffic Control or the airport manager has been made. I determine this distance with GPS using a pilot's app called Foreflight on the Apple Ipad or Iphone.
- I land my UAS prior to manufacturer recommended minimum level of battery power
- I pilot my UAS through remote control by line of sight
- My UAS uses GPS and a flight safety feature whereby it returns to a preprogrammed position and then slowly lands if communication with the remote control pilot is lost
- I actively analyze flight data and other sources of information to constantly update and enhance safety protocols
- I only operate in reasonably safe environment that are strictly controlled, are away from power lines, elevated lights, airports and actively populated areas
- I conduct extensive pre-flight inspections and protocol, during which safety carries primary importance
- I always obtain all necessary permissions prior to operation; and,
- I have procedures in place to abort flights in the event of safety breaches or potential danger.

My, Tippon Chandler Weiss's, safety protocols (see attached) provide a level of safety equal to or exceeding existing rules. It is important to note that absent the integration of commercial UAS into our national airspace system, helicopters are the primary means of aerial video and photography for community awareness, inspections, crop management, and real estate. While the safety record of such helicopters is remarkably astounding, it is far safer to operate a battery powered UAS. First, the potential loss of life is diminished because UAS's carry no people on board and I only operate my UAS in specific areas away from mass populations. Second, there is no fuel on board a UAS and thus the potential for fire or explosions is greatly diminished. Third, the small size and extreme maneuverability of my UAS allow me to remotely pilot away from and avoid hazards quickly and safely. Accordingly, my UAS has been experimentally operated for familiarization/competency and will continue to operate at and above current safety levels.

Additional Information:

The bulk of our aerial operations will be using the DJI Phantom 2 with Gimbal (3 pounds) and the DJI Inspire 1 (6.5 pounds)

Using the same safety protocols as outlined and found in our Safety Protocol Manual (Separate document) for the DJI Phantom 2 and DJI Inspire 1 and an additional camera operator/observer, we would like to have the option of employing the DJI S900, a six (6) rotor multirotor UAS with GH4 Gimbal or similar variants(16.5 pounds). We feel we can operate all 3 UAS platforms with utmost safety without putting the general public or manned aircraft at risk. As noted in exemption 11138 for Douglas Trudeau, Realtor, the minimum separation between the public and his operations is 150 feet for his 3 pound DJI Phantom 2. We feel this is a safe minimum distance but if it is deemed that it needs to be larger, we would like to at least have the option of operating our DJI Phantom 2 at 150 feet or greater and the larger separation distance to apply to our DJI Inspire and/or DJI S900.

10 Additional documents submitted as proprietary information.

Sincerely,
Tippon Chandler Weiss

AirCam Photography