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

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

September 21, 2015

Exemption No. 12948
Regulatory Docket No. FAA−2015-2570

Mr. Michael J. Knudsen
14 Birkdale Way
Trabuco Canyon, CA 92679

Dear Mr. Knudsen:

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 June 18. 2015, you petitioned the Federal Aviation Administration (FAA) for an exemption. The petitioner requested to operate an unmanned aircraft system (UAS) to conduct aerial photography and videography.

See Appendix A for the petition submitted to the FAA describing the proposed operations and the regulations that the petitioner seeks an exemption.

The FAA has determined that good cause exists for not publishing a summary of the petition in the Federal Register because the requested exemption would not set a precedent, and any delay in acting on this petition would be detrimental to the petitioner.

Airworthiness Certification

The UAS proposed by the petitioner is a DJI Phantom 2 Vision+.

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 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, Mr. Michael J. Knudsen 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, Mr. Michael J. Knudsen is hereafter referred to as the operator.

[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.

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 Vision+ 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 September 30, 2017, unless sooner superseded or rescinded.

Sincerely,

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

Enclosures

June 18, 2015

U.S. Department of Transportation
Docket Management System
West Building, Ground Floor, Room w12-140
1200 New Jersey Ave, SE
Washington, D.C. 20590

Re: Exemption request pursuant to Section 33 of the FAA Reform act and the sections of 14 CFR as follows: 91.7(a), 91.103, 91.119(c), 91.121, 91.151(a), 91.405(a), 91.407(a)(1), 91.409(a)(1) & (2), 91.417 ((a) & (b)

Dear Sir or Madam,

I am a photographer providing commercial services to individuals and businesses in the form of photography, videography, image retouching and enhancement, and related services. I also do personal projects whose work may subsequently be offered for sale. As with videography, low level aerial photography has become a necessary tool to remain competitive in my business. The recent availability of inexpensive unmanned aircraft systems (UAS) has made the ability to offer aerial imaging economically viable for people like me. So, I am requesting the FAA provide the exemption appropriate for me to do so.

Although these UAS's are an affordable way to offer aerial imaging, they represent a significant investment for an individual and if lost or damaged for any reason, and such loss not only affects my ability to sell my services, but also mean expensive replacement or repair, and the delay is offering services involved. So it is very much in my best interest to operate with the utmost of safety at all times. I simply avoid any conditions that represent unnecessary risk to people, property, or my equipment.

Further, customers expect my services to be completely free of any kind of risk, as my business relies on my reputation for quality, timeliness and safety. I always conduct preflight inspection and calibration to ensure not only that the UAS is prepared for flight mechanically, but also that all of its safety and flight control systems are operative, that it has sufficient power budget to perform the task with ample reserves for safe return, and that its fail-safe "return to home" feature is activated.

My objectives are two-fold – one, to demonstrate conscientious attention to the details of safety in full view of the customer, and two, to set an example of such behavior for others like myself, by establishing such expectation in the mind of the customer.

In all the flights I have conducted as a hobbyist, I have never had a single incident of loss of control or crashes of any kind. I believe attention to the details of safe flight are the reason.

Therefore, pursuant to Section 333 of the FAA Modernization and Reform Act of 2012 (FMRA), I am applying for an exemption from the Federal Aviation Regulations (FARs) to allow commercial operation of my UAS, a DJI Phantom 2 Vision+ V3, under the conditions described in this request, and any others that may come from you as a result of being granted the exemption.

Name and Address of Applicant

Michael J. Knudsen
14 Birkdale Way
Trabuco Canyon, CA 92679
Tel: 949-887-4322 (mobile)
Email: mike@mikeknudsenphotography.com

Regulations From Which Exemption is Requested

91.7(a), 91.103, 91.119(c), 91.121, 91.151(a), 91.405(a), 91.407(a)(1), 91.409(a)(1) & (2), 91.417 ((a) & (b)

The Extent of Relief and the Reason I Seek the Relief

I submit this application in accordance with the Reform Act, 112 P.L. 95 §§ 331-334, seeking relief from any currently applicable FARs that would prevent me from commercially operating my UAS within the national airspace system. The Reform Act in Section 332 provides for such integration of civil unmanned aircraft systems into our national airspace system as it is in the public's interest to do so. My very light weight UAS meets the definition of "small unmanned aircraft" as defined in Section 331 and therefore the integration of my UAS is expressly contemplated by the Reform Act. The Reform Act guides the Secretary in determining the types of UAS's that may operate safely in our national airspace system. Considerations include: The weight, size, speed and overall capabilities of the UAS's; Whether the UAS will be operated near airports or heavily populated areas; and, whether the UAS will be operated by line of sight. 112 P.L. 95 § 333 (a). Each of these items is consistent with an exemption for me. My UAS has four (4) counter-rotating, self locking propellers for balance, control and stability. It is equipped with GPS , inertial compass, and auto return safety technology, in the event of depleted power reserve or loss of control signal. It weighs less than five (5) pounds (far below the maximum 55 pound limit), and carries no deliverable payload.

My UAS carries the latest factory provided control algorithms, which include prohibition from operating at more than 400 feet AGL, or operating near any Class A or B airport. It has a maximum speed of 35 miles per hour.

Finally, I am seeking relief similar to, and in no way exceeding the relief granted in Exemptions Nos 11062, 11109, 11112, and 11213, among others, except for those

specific items pertaining to licensed pilots, since I submit the relief I request is similar in all other material respects to those.

How My Request Would Benefit the Public as a Whole

The public would benefit in a number of ways.

First, aerial photography provides a unique viewing experience, previously only available at great cost to the public. Using a UAS for the same purpose offers a similar enhanced view for dramatically less cost, enabling many more people to enjoy such enhanced viewing for both leisure and business use.

Second, conventional methods, using manned aircraft such as helicopters, represent significant noise and disruption to the surrounding environment and residents. UASs, by comparison are virtually silent.

Third, conventional manned aircraft are limited to an altitude floor of 500 feet, limiting the quality and resolution of the images without significant further investment in sophisticated camera equipment, again limiting its widespread accessibility to the public.

Fourth, my UAS is battery powered, and uses an infinitely small amount of power for the typical photographic mission. Energy consumption, carbon footprint, and pollution are virtually non-existent compared to the same mission perform by a conventional manned aircraft. Further, a UAS takes off and lands directly at the point of use, rather than from a distant airport, which only increases the consumption of fossil fuel, carbon footprint, and pollution problem.

Fifth, this new technology allows for the many more applications thus enhancing the earning power of those in the profession, attracting more into the profession, thereby enhancing the national economy, with no adverse effects on the environment.

Finally, while both communities (manned aircraft and UASs) operate with safety as a first priority, accidents involving manned aircraft are orders of magnitute more serious in terms of human risk, property damage, and collateral damage. The primary risk in a UAS accident is loss of the aircraft. Due to their small size, light weight, absence of any combustible fuel, and slow speed, they are simply incapable of causing the kind of damage a manned aircraft can. This significant reduction in risk while proving enhanced quality of life is of significant benefit to the public.

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

Safety with regard to other aircraft is not affected for the following reasons.

First, my UAS (a DJI Phantom2 Vision+, V3) is electronically limited to a maximum altitude of 400 feet, AGL, while all other conventional aircraft are limited to a minimum altitude of 500 feet AGL, providing a 100 foot buffer, eliminating the risk of collision in flight. So, level of safety is equal to current law.

Second, built in control algorithms prohibit my UAS from flight near all Class A & B airports in the NAS, eliminating the risk of low level collision during takeoff and landing. So, the level of safety is equal to current law.

Third, I always fly within clear line of sight, and therefore am well aware of people, obstacles, vehicles, and other obstructions, and in full control at all times. This exemption would add no safety risk to the current law that allows similar hobbyist use.

Safety with regard to people and property on the ground is at least equal to current law for the following reasons.

First, in the event of pilot incapacitation, the UAS stops and hovers in space using its GPS lock to maintain position. It remains there until a low fuel or loss of control condition surfaces. This is safer than current law, since pilot incapacitation usually means loss of control for manned aircraft.

Second, in the event of low fuel (battery charge), the UAS automatically returns to its takeoff point without input from the operator. Manned aircraft do not have this feature. This is clearly safer than current law.

Third, in the event of loss of Ground Station Control (GSC) signal, my UAS is programmed to automatically return to its original takeoff point, unless control is recovered by the pilot. Since manned aircraft do not possess this capability, safety is at least equal to current law.

Regarding impact of an accident, the combination of probability and consequence must be considered. In the event of a manned aircraft accident, the size, speed, and fuel payload of a conventional manned aircraft are many orders of magnitude larger than a UAS. So, there are always serious consequences of an incident to ground people, property, passengers, and crew. All personnel on board the aircraft are put in mortal danger. The small size (less than one cubic foot envelope), light weight (less than five pounds), relatively slow operating speed (less than 35 MPH), and remote control nature of an UAS renders any impact of a crash trivial by comparison. The primary risk is to the UAS itself. If the choice is taking aerial photos from a manned aircraft or a UAS, the UAS is therefore vastly safer for such work, and certainly no less safe than current law, and no less safe than hobbyist use for similar purpose.

The enablement of commercial use of a UAS for the same purposes – i.e. aerial photography – as current law permits for hobbyist use is in every respect just as safe, since all material operating environments, conditions, and procedures are the same. I will not operate outside those existing restrictions. The operator is simply receiving compensation.

Specific Section or Sections of 14 CFR from which I am seeking Exemption and reasons

14 C.F.R. § 91.7 (a) Civil aircraft airworthiness
(a) No person may operate a civil aircraft unless it is in an airworthy condition.
Since no FAA regulatory standard exists for determining airworthiness of the UAS, I request an exemption. I will employ all calibration and safety checks prescribed by the manufacturer prior to every flight.

14 C.F.R. § 91.103: Preflight Action
Section 91.103 requires each pilot to preflight an aircraft before flight to insure the safety of flight.
As FAA approved rotorcraft flight manuals will not be used, an exemption is requested. However, an equivalent level of safety will be provided. I will take all actions, including reviewing weather, flight battery requirements, landing and takeoff distances, and aircraft performance data before commencement of flight.

14 C.F.R. §91.119(c): Minimum Safe Altitudes
Section 91.119 establishes safe altitudes for operation of civil aircraft. Section 91.119 provides, in pertinent part, that: " ... except when necessary for takeoff or landing, no person may operate an aircraft below the following altitudes: .....
(b) Over other than congested areas. 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."
Because I request authority to operate at altitudes only up to 400 feet AGL, I am asking for an exemption is needed to allow such operations.

C.F.R. §91.121 Altimeter Settings
This regulation requires each person operating an aircraft to maintain cruising altitude by reference to an altimeter that is set: " ... to the elevation of the departure airport or an appropriate altimeter setting available before departure."
My UAS may not have a barometric altimeter, but instead a GPS altitude read out, I am requesting an exemption. An equivalent level of safety will be achieved by the operator, pursuant to the safety check list and live flight data monitoring, confirming the altitude of the launch site shown on the GPS altitude indicator before flight.

14 C.F.R. § 91.151(a): Fuel Requirements for Flight in VFR Conditions
Section 91.151 (a) prohibits an individual from beginning: "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- (1) During the day, to fly after that far at least 30 minutes; or (2} At night, to fly after that for at least 45 minutes."
The battery powering the UAS provides approximately 25 minutes of powered flight. The 30 minute reserve requirement in 14 CFR §91.151, is outside its total flying time capacity. However, the UAS is programmed to automatically return to its launch point when battery power drops to a level just sufficient for such return. Given this UAS

feature and the flight time limitations on the UAS, I am requesting an exemption.

14 C.F.R. §91.203 (a) and (b): Carrying Civil Aircraft Certification and Registration
The regulation provides in pertinent part:
(a) Except as provided in§ 91.715, no person may operate o civil aircraft unless it has within it the following: {1} an appropriate and current airworthiness certificate.
{b) No person may operate o civil aircraft unless the airworthiness certificate required by paragraph (a) of this section or a special flight authorization issued under §91. 715 is displayed at the cabin or cockpit entrance so that it is legible to passengers or crew.
The UAS fully loaded weigh is no more than 5 lbs and is operated without an on board pilot. As such, there is no ability or place to carry certification and registration documents or to display them on the UASs. Nor are there passengers or crew to view them. I will offer similar identification by keeping appropriate documents at the ground control point to the extent they are applicable to the UAS. Therefore I request an exemption.

14 C.F.R. §91.405 (a); 407 (a) (1); 409 (a) (2); 417(a) & (b): Maintenance Inspections
These regulations require that an aircraft operator or owner: "shall have that aircraft inspected as prescribed in subpart E of this part and shall between required inspections, except as provided in paragraph (c) of this section, have discrepancies repaired as prescribed in part 43 of this chapter ... ," and others shall inspect or maintain the aircraft in compliance with Part 43.
Given that these sections and Part 43 apply only to aircraft with an airworthiness certificate, these sections will not apply to the applicant. I will perform all maintenance pursuant to the flight manual and operating handbook. An equivalent level of safety will be achieved because these UAS are very limited in size and will carry no deliverable payload. If mechanical issues arise the UAS can land immediately and will be operating from no higher than 400 feet AGL. I will ensure that the UAS is in working order prior to initiating flight, perform required maintenance, and keep a log book of any maintenance performed. The operator is the person most familiar with the aircraft and best suited to maintain the aircraft in an airworthy condition to provide the equivalent level of safety. An equivalent level of safety will be achieved because maintenance and inspections will be performed in accordance with the UAS Manufacturer's Manual, as referenced in the Aircraft Operations Manual. As provided in the Operations Manual, the operator will ensure that the UAS is in working order prior to initiating flight and perform required calibration and maintenance needed.

SUMMARY FOR PUBLICATION

Michael J. Knudsen seeks an exemption from the following rules,

91.7 (a); 91.103;91.119(c); 91.121; 91.151(a); 91.405(a);
91.407(a)(1); 91.409 (a)(1) and (2); 91.417(a) &(b).

to operate commercially a small unmanned aircraft system (UAS) for aerial photography and videography. Approval of exemptions allowing UASs commercial operations in the

areas listed above will enhance safety by reducing risk. A UAS weighing fewer than 5 lbs. and powered by batteries eliminates virtually all of that risk given the reduced mass and lack of combustible fuel carried on board traditional aircraft performing the same function. The UAS will carry no passengers or crew and, therefore, will not expose them to the risks associated with manned aircraft flights. The operation of small UAS conducted in the strict conditions outlined above, will provide an equivalent level of safety supporting the grant of the exemptions requested herein, including exempting the applicant from the requirements of Part 21 and allowing commercial operations. These UASs operate at very slow speeds, close to the ground, as a result, are far safer than conventional operations conducted with conventional aircraft operating in close proximity to the ground and people.

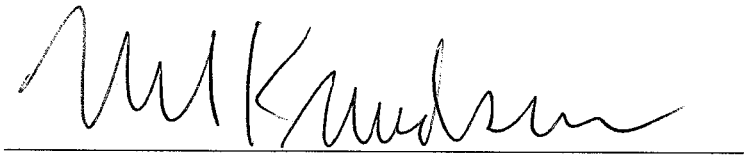
Privacy
As a photographer, I am already aware of the need to respect the privacy of persons, their likenesses, and private property. I obtain permission in advance and model releases where needed, for any work involving private property, and commercial use of images.

Summary
I respectfully submit that satisfaction of the criteria provided in Section 333 of the Reform Act of 2012 (size, weight, speed, operating capabilities, proximity to airports and populated areas and operation within visual line of sight and national security) provide more than adequate justification to grant me the requested exemption. If you have any questions or need additional information or clarification of any information contained herein, please contact me as follows:

Michael J. Knudsen
14 Birkdale Way
Trabuco Canyon, CA 92679
Tel: 949-887-4322 (mobile)
Email: mike@mikeknudsenphotography.com

I will respond promptly.

Thank you very much.



Michael J. Knudsen