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

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

June 23, 2015

Exemption No. 11861
Regulatory Docket No. FAA–2015–1118

Mr. Jeff Weber
Mr. Greg Koch
Montana Aerial Solutions
5813 Kit Lane South
Billings, MT 59106

Dear Messrs. Weber and Koch:

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 14, 2015, you petitioned the Federal Aviation Administration (FAA) on behalf of Montana Aerial Solutions (hereinafter petitioner or operator) for an exemption. The petitioner requested to operate an unmanned aircraft system (UAS) to conduct aerial data capture for surveying, agriculture, inspection, real estate, general photography, and special 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 is a 3DRobotics IRIS+.

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, Montana Aerial Solutions is granted an exemption from 14 CFR §§ 61.23(a) and (c), 61.101(e)(4) and (5), 61.113(a), 61.315(a), 91.7(a), 91.119(c), 91.121, 91.151(a)(1), 91.405(a), 91.407(a)(1), 91.409(a)(1) and (2), and 91.417(a) and (b), to the extent necessary to allow the petitioner to operate a UAS to perform aerial data collection. This exemption is subject to the conditions and limitations listed below.

[1] Aerial data collection includes any remote sensing and measuring by an instrument(s) aboard the UA. Examples include imagery (photography, video, infrared, etc.), electronic measurement (precision surveying, RF analysis, etc.), chemical measurement (particulate measurement, etc.), or any other gathering of data by instruments aboard the UA.

Conditions and Limitations

In this grant of exemption, Montana Aerial Solutions 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 3DRobotics IRIS+ 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 June 30, 2017, unless sooner superseded or rescinded.

Sincerely,

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

Enclosures

MONTANA
AERIAL SOLUTIONS

4/14/15

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

Exemption Request Section 333 of the FAA Reform Act

To Whom It May Concern,

In accordance with Section 333 of the FAA Modernization and Reform Act of 2012 and 14 C.F.R. Part 11, Montana Aerial Solutions, a licensed business in the State of Montana, hereby applies for exemptions from the following Federal Aviation Regulations (FARs) in order to operate a Small Unmanned Aircraft System (sUAS) for commercial applications in airspace that is governed by the Federal Aviation Administration (FAA). All flight operations will be conducted under the conditions and boundaries outlined herein or as established by the FAA in accordance with Section 333.

The exemptions, as requested by Montana Aerial Solutions, would permit the provision of commercial services to customers that are in need of aerial data capture from a sUAS. Montana Aerial Solutions requests these exemptions in order to perform commercial flights in the following areas:

- Surveying
- Agriculture
- Aerial Inspection
- Real Estate Photography
- General Photography
- Special Events

All flights will be conducted over private or controlled access property with the consent and knowledge of the property owner or controlling party. All flight operations will maintain a 500 foot buffer from all nonparticipating persons, vessels, vehicles, and structures unless sufficient barriers are in place to protect nonparticipating persons from undue harm. Flight operations will also only be operated near vessels, vehicles, and structures where the property owner/controller has granted permission and a safety assessment has been made.

All of Montana Aerial Solutions' flight operations will be conducted by pilots that are holding current FAA Private or Commercial Licenses with appropriate medical certificates. All visual observers (VO) will be trained to perform their required duties before flight operations begin.

Regulations from which an exemption is requested:

14 CFR 61.113(a)
14 CFR 91.7(a)
14 CFR 91.119(c)
14 CFR 91.121
14 CFR 91.151(a)
14 CFR Subpart E (91.401 – 91.417)

THE UNMANNED AIRCRAFT SYSTEM

Due to the low cost of operation, increased safety to surrounding persons and property, reduced noise and environmental impact, and the versatility of the sUAS platform, we believe that a sUAS can be a great solution to consumers who would, otherwise, have to hire a larger aircraft, such as a helicopter, in order to capture the data that they need.

Montana Aerial Solutions is seeking this exemption in order to operate a 3DR IRIS+ quadcopter equipped with the 3DR Pixhawk controller board, a two-axis Tarot T-2D Brushless Gimbal and a GoPro camera. 3DRobotic's APM software will be the ground station operating system. Safety failsafe features equipped ensuring safe operations include:

- Geo-fence capability that will limit the height and horizontal distance that the IRIS can fly from the operator.
- RTL mode- In the case of low battery or lost communication between the IRIS and the operator, the IRIS will return to the point of takeoff and land itself. This mode can be manually turned on by the operator at any point in the flight.
- Land mode- Loss of GPS signal will engage land mode. The IRIS will land automatically at its current position if in a flight mode that requires GPS signal.
- Telemetry radio communication provides real time feedback of flight data, including current altitude, attitude, altitude change rate, and GPS coordinates.

Aforementioned safety features have undergone rigorous testing procedures by 3DRobotics as well as Montana Aerial Solutions. Logs and descriptions of each safety test flight performed by Montana Aerial Solutions are available upon request. These safety features combined with the PIC's knowledge obtained during flight training will successfully mitigate operation safety risks. Montana Aerial solutions is in development of future aircraft that will be using the Pixhawk controller, enabling use of aforementioned safety features in all future aircraft utilized by Montana Aerial Solutions.

FLIGHT OPERATIONS

The operator and PIC will guarantee that operations adhere to strict standards as set below:

- Prior to their first operation, all PICs employed by Montana Aerial Solutions will complete a sUAS education and training program that highlights critical areas including applicable regulations and documents, charts, NOTAMS and Advisory Circulars, Radio Communications Procedures, Human Factors and Crew Resource Management, Basic Small UAS Aerodynamics, Weather Factors, Airmanship and Decision-making, and Safe Operating Procedures.
- The PIC must show that they are able to safely operate the UAS in a safe manner before proceeding with operations.
- The UA will be operated at airspeeds below 29 knots.
- The UA will be operated below 400 feet above ground level (AGL) at all times.
- The UA will be operated within visual line of sight (VLOS) at all times.

- All operations will utilize a visual observer (VO). The UA will be operated within the visual line of sight (VLOS) of the PIC and VO at all times.
- The VO will not perform any other duties beyond assisting the PIC with seeing and avoiding traffic and other ground based obstacles.
- Proper preflight inspections will take place before each flight.
- The UA may not operate within 5 nautical miles of an airport reference point unless a letter of agreement with that airport's management is obtained.
- Operations will be conducted in accordance with a Notice to Airmen (NOTAM).
- 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.
- The PIC must maintain a battery reserve that allows the UA to return to point of landing at normal cruise speed and land with 30% battery power.
- The UA must remain clear of and yield to all other air traffic.
- Flight operations will remain 500 feet from all nonparticipating persons, vehicles, and structures unless:
    a. Barriers or structures are present that sufficiently protect nonparticipating persons from debris in the event of an accident.
    b. All participating persons will be made aware of the dangers of flying a UA and the safety precautions and features that are in place.
    c. The aircraft is operated near vessel, vehicles, or structures where the property owner/controller has granted permission and the PIC has made a safety assessment in regard to the close operation to these objects.
    d. Operations near the PIC or VO do not present an undue hazard to the PIC or VO per 91.119(a).
- All operations will be conducted over private or controlled-access property with prior permission from the property owner/controller or authorized representative.

Montana Aerial Solutions is confident that the knowledge of the PIC, along with the strict safety standards set by Montana Aerial Solutions, the FAA, and the physical safety properties of the sUAS, will allow safe and efficient operations.

Montana Aerial Solutions hereby requests exemption under Section 333 in order to pursue commercial sUAV applications with the intent to provide customers with the safest, highest quality platform available.

Sincerely,

Jeff Weber Greg Koch

Montana Aerial Solutions
5813, Kit Lane South
Billings, Montana, 59106

EXEMPTION REQUESTS AND EQUIVALENT LEVEL OF SAFETY

Montana Aerial Solutions requests an exemption from the following regulations as well as any additional regulations found by the FAA to be necessary for safe and efficient UAS flight operations.

14 CFR 61.113(a), Private pilot privileges and limitations: Pilot in command
This regulation states that no person holding a private pilot certificate may act as pilot in command of an aircraft that is carrying passengers or property for compensation or hire; nor may that person, for compensation or hire, act as pilot in command of an aircraft.

We believe that a PIC with a private pilot license has sufficient skill and knowledge to complete operations, especially after completing a sUAS knowledge and training course. We do not think that a commercial pilot license will significantly improve a PIC's performance while operating a UAV. Therefore, we ask for an exemption from 14 CFR 61.113(a) in order to operate commercially with the minimum of a private pilot license.

14 CFR 91.7(a) Civil aircraft airworthiness
As a UAS will not require an airworthiness certificate, we believe that this regulation is not applicable. Therefore, we request exemption from this regulation.

14 CFR 91.119(c) Minimum safe altitudes
This regulation states that no person may operate an aircraft below 500 feet above the surface as well as within 500 feet of any person, vessel, vehicle, or structure.

We believe that, because of the nature of most UAS operations, an exemption is required in order to allow operation closer than 500 feet to vessels, vehicles, or structures as long as permission is granted from the owning/controlling parties and an assessment is made to assure that people and property are safe from undue harm. We also request that operations be allowed over congested areas as long as the operations stay within the following standards:

- Flight operations will remain 500 feet from all nonparticipating persons, vehicles, and structures unless:
    a. Barriers or structures are present that sufficiently protect nonparticipating persons from debris in the event of an accident.
    b. Participating persons are made aware of the dangers of the UAS operation and the safety precautions that have been put into place.
    c. The aircraft is operated near vessel, vehicles, or structures only where the property owner/controller has granted permission and the PIC has made a safety assessment in regard to the close operation to these objects.
    d. Operations near the PIC or VO do not present an undue hazard to the PIC or VO per 91.119(a).
    e. All operations will be conducted over private or controlled-access property with prior permission from the property owner/controller or authorized representative.

14 CFR 91.121 Altimeter settings
As our UAS does not utilize a standard barometric altimeter, we request exemption from 91.121 to the extent necessary to comply with applicable conditions and limitations. The altimeter reading for our UAS is calculated by GPS. The accurate and continuous readings that we receive from this GPS system allow us to operate our drone below set minimums at all times.

14 CFR 91.151(a) Fuel requirements for flight in VFR conditions
This regulation states that no person may begin a flight in an airplane under day-VFR conditions unless there is enough fuel to fly to the first point of intended landing and, after that, fly for an additional 30 minutes. This regulation is intended to create a safe flying environment by creating sufficient fuel reserves. Therefore, we do not request an exemption from this regulation but, instead, request that the term "fuel" be changed to "battery power." We also request that our battery power reserve for our UAS operations be 30%.

Our UAS has capabilities that allow the PIC to monitor battery power levels as well as a return to land feature that will engage when battery levels reach a critical level, therefore returning the UAS automatically to the point of takeoff.

14 CFR Subpart E (91.401 – 91.417)
Montana Aerial Solutions requests an exemption from the stringent maintenance regulations that are designed to increase the safety of the flying environment by ensuring adequate inspections and servicing of aircraft. We are requesting exemption from these regulations because we believe that, due to the simplicity and the ease of repair, general and preventive maintenance can be performed by the PIC. The PIC is required to make a thorough preflight inspection before each operation. In the case of a discovery of faulty equipment, most replacement and repair can simply be done on site as long as repairs are of an airworthy manner. Major repair will still have to be performed by a licensed repair facility which will be logged in the UAS records.

We believe that our comprehensive preflight inspection, the simplicity of the UAS itself, the nature of the UAS's operations, and the fact that no passengers are on board the aircraft make our operations eligible for exemption from CFR Subpart E (91.401 – 91.417).