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

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

September 17, 2015

Exemption No. 12913
Regulatory Docket No. FAA–2015–2215

Mr. Shad Wyckoff
Epic Aerial
2033 Oxford Street
Edmond, OK 73013

Dear Mr. Wyckoff:

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 May 22, 2015, you petitioned the Federal Aviation Administration (FAA) on behalf of Epic Aerial (hereinafter petitioner or operator) for an exemption. The petitioner requested to operate an unmanned aircraft system (UAS) to create aerial footage for use in television commercials and various multimedia outlets.

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 S1000.

The petitioner requested relief from 14 CFR part 21, *Certification procedures for products and parts, Subpart H—Airworthiness Certificates*. In accordance with the statutory criteria provided in Section 333 of Public Law 112−95 in reference to 49 U.S.C. § 44704, and in consideration of the size, weight, speed, and limited operating area associated with the

aircraft and its operation, the Secretary of Transportation has determined that this aircraft meets the conditions of Section 333. Therefore, the FAA finds that the requested relief from 14 CFR part 21, *Certification procedures for products and parts, Subpart H—Airworthiness Certificates*, and any associated noise certification and testing requirements of part 36, is not necessary.

The Basis for Our Decision

You have requested to use a UAS for aerial data collection[1]. The FAA has issued grants of exemption in circumstances similar in all material respects to those presented in your petition. In Grants of Exemption Nos. 11062 to Astraeus Aerial (*see* Docket No. FAA−2014−0352), 11109 to Clayco, Inc. (*see* Docket No. FAA−2014−0507), 11112 to VDOS Global, LLC (*see* Docket No. FAA−2014−0382), and 11213 to Aeryon Labs, Inc. (*see* Docket No. FAA−2014−0642), the FAA found that the enhanced safety achieved using an unmanned aircraft (UA) with the specifications described by the petitioner and carrying no passengers or crew, rather than a manned aircraft of significantly greater proportions, carrying crew in addition to flammable fuel, gives the FAA good cause to find that the UAS operation enabled by this exemption is in the public interest.

Having reviewed your reasons for requesting an exemption, I find that—

- They are similar in all material respects to relief previously requested in Grant of Exemption Nos. 11062, 11109, 11112, and 11213;
- The reasons stated by the FAA for granting Exemption Nos. 11062, 11109, 11112, and 11213 also apply to the situation you present; and
- A grant of exemption is in the public interest.

Our Decision

In consideration of the foregoing, I find that a grant of exemption is in the public interest. Therefore, pursuant to the authority contained in 49 U.S.C. 106(f), 40113, and 44701, delegated to me by the Administrator, Epic Aerial 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, Epic Aerial 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 S1000 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

May 22, 2015

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(405)820-6716

U.S. Department of Transportation, Docket Operations
West Building Ground Floor, Room W12-140
1200 New Jersey Avenue, SE
Washington, DC 20590

RE: Exemption Request Section 333 of the FAA Reform Act of the Federal Aviation Regulations from 14 C.F.R part 11. 45.23(b);14 CFR Part 21;14 CFR 61.113 (a) & (b); 91.7 (a);91.9 (b) (2); 91.103(b); 91.109;91.119; 91.121; 91.151(a);91.203(a) & (b);91.405 (a); 91.407(a) (1); 91.409(a) (2);91.417 (a) & (b).

To whom it may concern:

Pursuant to the Section 333 of the FAA Modernization and Reform Act of 2012 (the "Reform Act"), Epic Aerial (the "applicant"), operator of an Unmanned Aircraft Systems ("UAS") seeks an exemption from the Federal Aviation Regulations ("FARs") to allow for commercial operation for aerial imaging and video in the state of Oklahoma and within the United States.

Public Benefits

Epic Aerial is a veteran affiliated small film and video production company which offers aerial footage for use in television commercials and various multimedia outlets (i.e. educational, corporate and safety videos). The use of such footage has been used for many years in the film and video industry through manned, fix winged aircraft and helicopters; however, this method of operation is very costly and would be unattainable for a small business such as ours. The use of UAS's has exploded in recent years with the universal availability of small, affordable machines. Our clients expect us to deliver on our philosophy of having a commitment to offer the latest technology and highest cinematographic quality, while maintaining the utmost safety for the public at large. The operating commitments we have placed upon ourselves have led us to purchase a UAS for use in our commercial productions in the United States. Our UAS benefits the general public because it is much more efficient and safer than the traditional ways of using a plane or helicopter to achieve the same result. Our UAS will pose much less of a safety concern for the general public when compared to larger, manned aircrafts because we can now provide our services while being conservative with fuel, time, emissions, noise, and other resources, considering the size, weight, speed, and absence of combustible fuels. As such, we are seeking the exemptions detailed below to continue meeting the demands of our clients.

Regarding the Unmanned Aircraft System & Operations

Epic Aerial operates the DJI S1000 which is designed specifically for professional aerial photography and cinematography. Our combined DJI flight controller guarantees our UAS's ability to regain almost instantaneous stability with the operational loss of a rotor. This aircraft operates in octo (8) armature configuration, each arm having one (1) motor. Each frame arm is designed with an 8° inversion and a 3° inclination. These angles make the UAS more stable when rolling and pitching overall, which additionally increases our UAS's safety factor. The S1000 weighs 19.5 pounds or fewer (including payload). The UAS has the capability to hover, and move in both vertical and horizontal planes. The UAS will be operated within visual line of sight (VLOS) only, and in tightly controlled and limited access airspace. The S1000 is capable of speeds up to 35 Knots but will routinely operate at speeds much less than its max capability. The S1000 will routinely be operated below 200 feet above ground level (AGL), and never operated above 400 AGL. The S1000 UAS is also equipped with a fail-safe which initiates emergency landing in the event of loss of power or signal as well as return to home (RTH) safety functions. The UAS is equipped with a GPS system which aids in the stabilization of the aircraft. This GPS system is what allows the UAS to RTH when battery levels are low or at any point in loss of radio communication with operator. The UAS is also equipped with an Inertial Measurement Unit (IMU). The IMU provides the flight controller with real-time flight measurement data through the use of a barometric altimeter, 6-axis gyroscope and accelerometer. These sensors allow the UAS additional stability, which allows the aircraft to compensate and adjust immediately to varying climate conditions to hold its position. The UAS also has eight (8) LEDs, one on each armature, with the two front arms differentiated by contrasting colors to easily identify orientation. All operations will be conducted with written/oral permission of the property owner(s). The culmination of these safety features insure that the UAS can and will be operated safely without posing a danger to our National Airspace System (NAS) or the public at large.

Epic Aerial utilizes an extensive checklist which goes above and beyond manufacturer requirements and recommendations prior to each flight and maintains aircraft readiness through rigorous and thorough maintenance checks. Our Pre-flight checklist consists of ensuring all parts are in good condition before each flight; any worn or broken parts will be immediately replaced before deeming the UAS airworthy. Propellers and motors are checked for proper operations and all connections are torqued to manufacturer recommendations. All wiring and power systems are inspected for cracks, nicks or other wear that might impair system well-being or inhibit safety. Batteries for both UAS and pilot control transmitter are checked, and are never operated below manufacturer's recommended levels. Current and future weather conditions are assessed before each flight. The flight path and its surrounding environment are closely studied, and if necessary physically inspected, prior to flight. Emergency landing locations are identified in case of in-flight emergency. At the end of each day Epic Aerial performs a maintenance check which includes all of the aforementioned maintenance operations. The manufacturer's website is consulted on a regular basis to insure that the UAS's firmware is current and any new maintenance routines are adhered to. If any malfunctions, abnormalities or other irregularities are noticed all operations are ceased until the cause has been determined and corrected. Once

corrected the craft is subjected to extensive testing as well as the pre and post maintenance checks before deeming the UAS airworthy.

The S1000 UAS utilizes 2.4ghz Radio Frequency (RF) transmitter/controller/receiver for aircraft control. A 5.8ghz RF is used for transmission of video/photography functions.

Epic Aerial will coordinate all flight activities with Flight Standards District Offices (FSDO) prior to any operations through phone or email contact with local FSDO's in our effort to meet all existing requirements for UAS flights in NAS.

Regarding the Unmanned Aircraft PIC

The Pilot in command (PIC) is a United States Air Force Veteran with a background of six (6) plus years of experience flying RC helicopters/quadcopters with no incident. Included in the aerial experience, these six years also are accompanied by 300+ hours in a flight simulator. Additionally, Air Force electronics schooling and training give the PIC a level of expertise above and beyond normal to diagnose, troubleshoot and repair UAS components as well as a thorough understanding of RF operational principles. PIC total flight time averages to 900 hours per year for a total of 3600 total hours of flight time with various platforms and configurations of RF controlled vehicles. The operation of the UAS includes multiple visual observers, with at all times a minimum of one visual observer. Visual observer responsibility is to maintain visual contact at all times with UAS and alert PIC of any obstructions and/or unsafe conditions that may be present during flight as well as any onlookers that may gather. The PIC also holds a valid Oklahoma Drivers License.

The UAS will be operated within visual line of sight (VLOS) of the PIC at all times. This enables the PIC 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.

Exemptions being sought by Epic Aerial are as follows:

14 CFR Part 21 subpart H

The UAS to be operated carries neither pilot nor passenger and carries no explosive materials or flammable liquids. Given the size (3.4ft X 2.5ft), weight (19.5 pounds), speed <35Knots, and limited operating area associated with the aircraft to be utilized, we request exception. In the restricted environment and under the conditions proposed operation will be at least as safe, or safer, than a conventional aircraft operating with an airworthiness certificate without said restrictions.

14 CFR 45.23 (b)

Due to the size of this UAS it does not have a cockpit, cabin, or pilot station on which to mark certain words or phrases. Lettering would be very difficult to place on such a small aircraft and dimensions would need to be smaller than required minimum. Understanding the importance of lettering we will mark our UAS with the largest possible letters by placing the assigned number

or name, based on request/ruling of FAA, on UAS fuselage. The equivalent level of safety will be provided by having the UAS marked on its fuselage as required.

14 CFR 91.7 (a)
As there will be no airworthiness certificate for the aircraft, should this exemption be granted, no FAA regulatory standard will exist for determining airworthiness. Given the size of the aircraft for maintenance and use of safety check list prior to each flight an equivalent level of safety will be provided.

14 CFR 91.9 (b) (2)
Given the size and configuration, the UAS has no ability to carry a flight manual on the aircraft. There is no room, capacity, or pilot on board to adequately carry flight manual. An equivalent level of safety will be maintained by keeping the flight manual at ground control point where the Pilot in Command (PIC) will have immediate access to it.

14 CFR 91.103
As FAA approved flight manuals will not be provided for the aircraft an exemption will be needed. Normal procedures including but not limited to; reviewing weather, flight battery requirement, landing and takeoff distances, along will all of those found in the "Spreading Wings S1000 Users Manual," which will be available to PIC at all times when the UAS is in operation, allow us to maintain an equivalent level of safety and preflight protocol to properly match the UAS being operated.

14 CFR 91.109
UAS and remotely piloted aircraft do not have fully functional dual controls. Flight control is achieved through the use of a control box that communicates with the aircraft via radio communications. The equivalent level of safety is provided because neither a pilot nor passenger will be carried in the aircraft and by the limited speed and small size of the aircraft.

14 CFR 91.113 (a) and (b)
We can achieve an equivalent level of safety as achieved by current regulations because our UAS does not carry pilot nor passenger. While helpful, a pilots' license will not ensure remote control piloting skills.

14 CFR 91.121
The UAS may not have a barometric altimeter, but instead does have a GPS altitude read out, we believe an exemption is needed. An equivalent level of safety is achieves by the operator receiving live flight data monitoring and confirming current altitude along with altitude of launch site shown on GPS altitude indicator.

14 CFR 91.203 (a) and (b)

Similar to, 14 CFR 91.9 (b) (2), given the size and configuration, the UAS has no ability to carry certificate and registration documents on the aircraft. There is no room, capacity, or pilot on board to adequately maintain such documents. An equivalent level of safety will be achieved by keeping these documents, to the extent they are applicable to the UAS, at the ground control point where the PIC has immediate access to them.

14 CFR 91.405 (a), 14 CFR 91.407 (a) (1), 14 CFR 91.409 (a) (2), 14 CFR 91.417 (a) and (b) Given these sections only apply to aircraft with an airworthiness certificate, theses sections do not apply to this applicant. As a safety precaution our PIC will perform preflight inspections and ensure UAS is in working condition before initiating each flight.

Epic Aerial believes the exemptions sought are well within reason and pose no credible risk to the public at large or NAS. Our operations described in the exemption request will be conducted wholly within the United States. We appreciate your consideration in this matter. If you have any questions or are in need of further information do not hesitate to contact us.

Sincerely,

Shad Wyckoff

Shad Wyckoff, Co-owner
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