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

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

September 21, 2015

Exemption No. 12941
Regulatory Docket No. FAA−2015−2292

Mr. G. Michael Cundiff, Jr.
Owner
Desert Vista Aerial Photography, LLC
120 South Houghton Road
Tucson, AZ 85748

Dear Mr. Cundiff:

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 27, 2015, you petitioned the Federal Aviation Administration (FAA) on behalf of Desert Vista Aerial Photography, LLC (hereinafter petitioner or operator) for an exemption. The petitioner requested to operate an unmanned aircraft system (UAS) to conduct aerial photography, videography, research, inspections, and data collection.

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

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

Airworthiness Certification

The UAS proposed by the petitioner are the DJI Phantom 2, DJI Phantom 2 Vision+, DJI Phantom 3 Advanced, and DJI Phantom 3 Professional.

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

[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, Desert Vista Aerial Photography, LLC is hereafter referred to as the operator.

Failure to comply with any of the conditions and limitations of this grant of exemption will be grounds for the immediate suspension or rescission of this exemption.

1. Operations authorized by this grant of exemption are limited to the DJI Phantom 2, DJI Phantom 2 Vision+, DJI Phantom 3 Advanced, and DJI Phantom 3 Professional 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

Desert Vista Aerial Photography, LLC
G. Michael Cundiff, Jr.
120 S Houghton Rd Ste 138-187
Tucson AZ 85748

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

May 27, 2015

Re: Request for Exemption under Section 333 of the FAA Modernization and Reform Act of 2012 and Part 11 of the Federal Aviation Regulations from 14 C.F.R §21, Subpart H; §61.23(a) and (c); §61.101(e)(4) and (5); §61.113; §61.315(a); §91.7(a); §91.9 (b) (2); §91.119(c); §91.121; §91.151(a)(1); §91.405(a); §91.407(a)(1); §91.409(a)(1) and (a)(2); §91.417(a) and (b).

Dear Sir(s)/Madam(s),

Pursuant to Section 333 of the FAA Modernization and Reform Act of 2012 and C.F.R. Part 11, Desert Vista Aerial Photography, LLC ("Petitioner") seeks an exemption from the Federal Aviation Regulations as listed below.

The requested exemption would allow Desert Vista Aerial Photography, LLC to provide aerial photography and video services to clients for use in real estate sales, local area orientation, surveying, marine photo and video, agriculture, academic research, aerial inspections, aerial data collection and special events using a combination of DJI Phantom 2, DJI Phantom 2 Vision+, DJI Phantom 3 Advanced and DJI Phantom 3 Professional Small Unmanned Aircraft Systems (SUAS). Use of a sUAS reduces the requirement to utilize manned lifting devices, manned climbing or manned aircraft over populated areas, for the same purpose and provides high quality results at a fraction of the price. These savings result in enhanced safety, efficiency and productivity as well as environmental benefits. Proposed operations will be conducted within and under the conditions outlined herein or as may be established by the FAA as required by Section 333.

As detailed in this document, the requested exemption would permit the operation of sUAS under controlled conditions in airspace that is 1) limited 2) predetermined and 3) controlled as to access. Granting this request fulfills the Secretary of Transportation's (FAA Administrator's) responsibilities and authority to not only integrate UAS's into the national airspace system, but to "...establish requirements for the safe operation of such aircraft systems [UAS's] in the national airspace system" under Section 333(c) of the Reform Act specific to the use of UAS's for real estate purposes.

The owner of Desert Vista Aerial Photography, LLC is an FAA Commercial certificated pilot with more than 3,100 flying hours in military and civilian single and multi-engine aircraft, including 8 years of experience flying in the planned area of operations. The owner, who will serve as the Chief Pilot, has served as the Chief of Safety for the Air Force's fleet of EC-130H aircraft also has extensive instructor and evaluator experience in EC/AC-130H aircraft. The Chief Pilot also has experience with Radio Control aircraft reaching back 17 years, including recent quad-copter sUAS experience.

In accordance with 14 C.F.R §11.81, Petitioner provides the following information in support of its petition for exemption:

I: Name and Address of the Petitioner:

G. Michael Cundiff, Jr.
Owner, Desert Vista Aerial Photography, LLC
120 S Houghton Rd Ste 138-187
Tucson AZ 85748

Phone: (520) 975-0798
Email: DVAPhotos@yahoo.com

II. The Specific Sections of Title 14 of the Code of Federal Regulations from Which Petitioner Requests Exemption are:

§21, Subpart H
§61.23(a) and (c)
§61.101(e)(4) and (5)
§61.113
§61.315(a)
§91.7(a)
§91.9 (b) (2)
§91.119(c)
§91.121
§91.151(a)(1)
§91.405(a)
§91.407(a)(1)
§91.409(a)(1) and (a)(2)
§91.417(a) and (b)

Airworthiness Certificates

14 C.F.R. §21, Subpart H, sets forth requirements for procurement of necessary airworthiness certificates in relation to FAR § 91.203(a)(1). The size, weight and enclosed operational area of the proposed sUAS meets (and exceeds) an equivalent level of safety pursuant to Section 333 of the Reform Act. Therefore, no airworthiness certificate is required in accordance with 14 C.F.R. Part 21, Subpart H. The petitioner seeks to gain confirmation the FAA concurs.

Medical Certificate

§61.23(a) and (c) require varying classes of medical certificates for a person depending on the privileges they are exercising and certificated for. Given the additional exemption request to §61.101, 61.113, and 61.315, Petitioner proposes the PIC will 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 as commensurate with their pilot certificate, but no more than that required for Private Pilot privileges (currently a third-class medical certificate).

Recreational Pilot Privileges

§61.101(e)(4) and (5) state that no person that holds a Recreational Pilot certificate may act as Pilot in Command of an aircraft for compensation or hire (4) or in furtherance of a business (5). The FAA has previously acknowledged in prior grants of exemption under Section 333 that a commercial pilot's certificate was not necessary to safely operate a sUAS, but that the FAA could not waive the requirement for an FAA-issued pilot's license. A Recreational Pilot certificate addresses the FAA's requirement that the Pilot in Command have the requisite training and understanding of the National Airspace System, and also ensures that the Pilot is registered with the FAA and will not pose a risk to national security. Petitioner proposes a PIC to hold either an airline transport, commercial, private, recreational, or sport pilot certificate.

Private Pilot Privileges

§61.113 states that no person that holds a Private Pilot certificate may act as Pilot in Command of an aircraft for compensation or hire. The FAA has previously acknowledged in prior grants of exemption under Section 333 that a commercial pilot's certificate was not necessary to operate a sUAS, but that the FAA could not waive the requirement for an FAA-issued pilot's license. A Private Pilot certificate addresses the FAA's requirement that the Pilot in Command have the requisite training and understanding of the National Airspace System, and also ensures that the Pilot is registered with the FAA and will not pose a risk to national security. Petitioner proposes a PIC to hold either an airline transport, commercial, private, recreational, or sport pilot certificate.

Sport Pilot Privileges

§61.315 states that no person that holds a Sport Pilot certificate may act as Pilot in Command of an aircraft for compensation or hire (c)(2) or in furtherance of a business (C)(3). The FAA has previously acknowledged in prior grants of exemption under Section 333 that a commercial pilot's certificate was not necessary to operate a sUAS, but that the FAA could not waive the requirement for an FAA-issued pilot's license. A Sport Pilot certificate addresses the FAA's requirement that the Pilot in Command have the requisite training and understanding of the National Airspace System, and also ensures that the Pilot is registered with the FAA and will not pose a risk to national security. Petitioner proposes a PIC to hold either an airline transport, commercial, private, recreational, or sport pilot certificate.

Airworthiness Certificate

§91.7(a) prohibits the operation of an aircraft without an airworthiness certificate. As no such certificate will be applicable in the form contemplated by the FARs, this Regulation is inapplicable. Petitioner will ensure the sUAS is in airworthy condition prior to every flight, by determining that the sUAS is in compliance with the manufacturer supplied operating documents and that the aircraft is in a condition for safe flight.

Flight Manual on board

§91.9 (b) (2) requires an aircraft flight manual in the aircraft. As the aircraft is remotely operated, Petitioner requests to maintain the flight manual in a position available to the PIC while operating the aircraft.

Minimum Safe Altitudes

§91.119(c) prescribes safe altitudes for the operation of civil aircraft. Due to the nature of the petitioner's operations (photography/video), it will be necessary to operate at distances less than prescribed. Given the UAS carries zero explosive material (i.e. fuel) onboard, any damage will come solely from a direct impact. However, given the small size and light weight of the proposed UAS systems, the hazard to persons, vehicles and structures is minimal compared to manned aircraft for which §91.119(c) was written.

Altimeter Requirements

§91.121 requires that aircraft maintain cruising altitudes by referencing an altimeter setting available within 100nm of the aircraft. The proposed aircraft have the ability to report a GPS-derived Above Ground Level (AGL) altitude to the PIC which is line with the guidance the FAA prescribes for Model Aircraft. Petitioner proposes utilization of this method vice the method prescribed in §91.121 for determining aircraft altitude.

Fuel Reserves

§91.151(a)(1) states that no person may begin a flight in an airplane under day-VFR conditions unless the there is enough fuel to fly to the first point of intended landing and to fly after that for at least 30 minutes. The proposed UASs have a flight time of approx. 12-15 minutes and carry no fuel, therefore the wording of this section cannot apply. Petitioner requests exemption to this requirement with the condition that the PIC is prohibited from beginning a flight unless (considering wind and forecast weather conditions) there is enough available power for the UAS to conduct the intended operation and land with the reserve power recommended by the manufacturer.

Maintenance Requirements

§91.405(a), §91.407(a)(1), §91.409(a)(1), §91.409(a)(2), §91.417(a) and §91.417(b) prescribe a maintenance regimen that is more applicable to a full sized manned aircraft than a SUAS with few serviceable parts. Instead, the petitioner proposes that prior to each flight the PIC will conduct a thorough pre-flight inspection and determine if the sUAS is capable of safe operation. Additionally, a qualified pilot will conduct a thorough functional test flight following any repairs to ensure proper and safe operation of the UAS.

III. The Nature and Extent of Relief Sought and Reasons Therefore:

Petitioner is seeking relief from any currently applicable FARs preventing commercial operation of a sUAS within the national airspace system. The Reform Act 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. As sUAS technology continues to rapidly expand, their utility and therefore their use will continue to rapidly expand as well. Integrating this technology into the National Airspace System incrementally is critical to ensuring the future progress and success of both traditional and emerging technologies and aircraft. Petitioner desires to help shape the landscape of that integration while providing a valuable service to the community.

IV. The Benefit to the Public Interest as a Whole if Petition is Granted:

Until recently, the only way to obtain an aerial photograph or video was through either a low flying manned aircraft, or a ground based device that raised a person precariously high in the air. By utilizing proven modern technology, Petitioner will reduce the threat to both the photographer and the public writ large. As the FAA recognized in the Douglas Trudeau, Realtor® Exemption, No. 11138:

> "Manned aircraft conducting aerial filming and photography can weigh 5,000 lbs. or more, are operated by an onboard pilot and may carry other onboard crewmembers, as well as 100 gallons or more of fuel. The petitioner's [sUAS] weighs less than 3 lbs. The pilot and crew will be remotely located from the aircraft. The limited weight reduces the potential for harm to persons or damage to property in the event of an incident or accident. The risk of an onboard pilot and crew during an incident or accident is eliminated with the use of a (iv) (v) within Class G airspace; and outside of 5 statute miles from any airport, heliport, seaplane base, spaceport, or other location with aviation activities."

In addition to reducing the risk to personal injury or death from these operations, the cost will be greatly reduced making the services once reserved for the wealthy available to middle class citizens. Additionally, aerial photography and video provides a positive economic impact for the community and for companies considering relocating or building in the local area or other areas as they are able to gain a greater understanding of the geographic area they are interested in. This is also an important service for individuals relocating for various reasons.

V. The Grant of the Requested Exemption Will Not Adversely Affect Safety:

As indicated in section III, petitioner's operations will enhance safety rather than adversely affect it. In addition to the reasons previously stated, petitioner's operations will not require a manned aircraft to orbit at low altitude in congested airspace and will reduce any noise and air pollution associated with the operation of those aircraft.

In addition to the inherent safety enhancements of operating a sUAS vice a manned aircraft, operational and technological protocols ensure improved safety of aerial photography operations.

<u>Technological protocols include:</u>

- Use of GPS technology to provide steady flight including a flight safety feature whereby the sUAS hovers and then slowly returns to an appointed location and lands if communication with the pilot is lost
- Preprogrammed "No Fly Zones" prevent the sUAS from operating in designated areas such as within 5 miles of an airport or above a designate altitude
- Automatic landing feature is triggered by a critical low battery status preventing the sUAS from running out of battery while in flight

Operational protocols include:

- Flight in Day VFR weather conditions only.
- Operated at an altitude of no more than 400 feet above ground level (AGL), though most flights will occur below 200 feet AGL. Speed will not exceed 30 mph over the ground. The Pilot in Command will maintain Visual Line of Sight capability at all times.
- A thorough pre-flight inspection will be accomplished in accordance with manufacturer instructions. A survey of the area in the vicinity of the flight operation will be conducted making note of any potential hazard(s) and a risk mitigation plan will developed for each hazard.
- Any time the sUAS has undergone maintenance or alteration, a qualified Pilot in Command will conduct a Functional Check Flight to ensure airworthiness. This flight will occur in a sparsely populated area, free of hazards.
- Flight will plan to terminate with no less than 25% battery power remaining.
- All training flights will occur in sparsely populated areas free of hazards.
- No individual will act as Pilot in Command (PIC) of the sUAS (except during training conducted in designated areas) without either an airline transport, commercial, private, recreational, or sport pilot certificate, and written certificate of qualification by the Petitioner's Chief Pilot. In order to receive a certificate of qualification, a PIC will be required to demonstrate proficiency in operating the sUAS in a manner consistent with the exemption, including normal, evasive and emergency maneuvers and maintaining appropriate distances from people, vessels, vehicles and structures.
- 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.
- All operations will utilize at least one visual observer (VO). 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 will 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.
- All Flight operations will be conducted at least 500 feet from all nonparticipating persons, vessels, vehicles, and structures unless:
    - Barriers or structures are present that sufficiently protect nonparticipating persons from the UA and/or debris in the event of an accident. If a situation arises where the PIC becomes aware of nonparticipating persons leaving such protection and are within 500 feet of the sUAS, flight operations will cease immediately in a manner ensuring the safety of nonparticipating persons.
- The sUAS will 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.

VI. A Summary the FAA May Publish in the Federal Register:

Desert Vista Aerial Photography, LLC seeks exemption from the requirements of 14 C.F.R §21, Subpart H; §61.23(a) and (c); §61.101(e)(4) and (5); §61.113; §61.315(a); §91.7(a); §91.9 (b) (2); §91.119(c); §91.121; §91.151(a)(1); §91.405(a); §91.407(a)(1); §91.409(a)(1) and (a)(2); §91.417(a) and (b). The requested exemption would allow the petitioner to provide aerial photography and video services to clients for use in real estate sales, local area orientation, surveying, marine photo and video, agriculture, academic research, aerial inspections, aerial data collection and special events using a combination of DJI Phantom 2 Vision , DJI Phantom 2 Vision+, DJI Phantom 3 Advanced and DJI Phantom 3 Professional Small Unmanned Aircraft Systems (SUAS). Use of a sUAS reduces the requirement to utilize manned aircraft over populated areas, manned lifting devices or manned climbing for the same purpose and provides high quality results at a fraction of the price. These savings result in enhanced safety, efficiency and productivity as well as environmental benefits. Proposed operations will be conducted within and under the conditions outlined herein or as may be established by the FAA as required by Section 333.

VII. Additional Information to Support the Request:

The FAA has issued grants of exemption in circumstances similar in all material respects to those presented in this 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.

Respectfully Submitted,

G. Michael Cundiff, Jr.
Owner, Desert Vista Aerial Photography, LLC

Attachments:

Attachment A: DJI Phantom 2 System Specs

Attachment B: DJI Phantom 2 Vision+ System Specs

Attachment C: DJI Phantom 3 Advanced System Specs

Attachment D: DJI Phantom 3 Professional System Specs

Attachment A: DJI Phantom 2 System Specs

Aircraft:

Weight (Battery & Propellers included) - 1000g

Hover Accuracy (Ready to Fly) - Vertical: 0.8m; Horizontal: 2.5m

Max Yaw Angular Velocity - 200°/s

Max Tilt Angle - 35°

Max Ascent / Descent Speed - Ascent: 6m/s; Descent: 2m/s

Max Flight Speed - 15m/s(Not Recommended)

Diagonal Length - 350mm

Flight Time - 25mins

Take-off Weight - ≤1300g

Operating Temperature - -10°C ~ 50°C

Supported Battery - DJI Smart Battery

DJI Smart Battery

2.4GHz Remote Control:

Operating Frequency - 2.4GHz ISM

Communication Distance (open area) - 1000m

Receiver Sensitivity (1%PER) - -97dBm

Working Current/Voltage - 120 mA@3.7V

Built-in LiPo Battery Working Current/Capacity - 3.7V, 2000mAh

Full User Manual available at http://www.dji.com/product/phantom-2/download

Attachment B: DJI Phantom 2 Vision+ System Specs

Aircraft:

Supported Battery - DJI 5200mAh LiPo Battery

Weight (Battery & Propellers included) - 1242g

Hover Accuracy (Ready to Fly) - Vertical: 0.8m; Horizontal: 2.5m

Max Yaw Angular Velocity - 200°/s

Max Tiltable Angle - 35°

Max Ascent / Descent Speed - Ascent: 6m/s; Descent: 2m/s

Max Flight Speed - 15m/s (Not Recommended)

Diagonal motor-motor distance - 350mm

Remote Control:

Operating Frequency - 5.728 GHz—5.85 GHz

Communication Distance (open area) - CE Compliance: 400m; FCC Compliance: 800m

Receiver Sensitivity (1%PER): -93dBm

Transmitter Power - CE Compliance: 25mW; FCC Compliance: 100mW

Working Voltage - 120 mA@3.7V

Built-in LiPo Battery Working Current/Capacity - 3.7V, 2000mAh

Range Extender:

Operating Frequency - 2412-2462MHz

Communication Distance (open area) - 500-700m

Transmitter Power - 20dBm

Power Consumption - 2W

Full User Manual available at http://www.dji.com/product/phantom-2-vision-plus/download

Attachment C: DJI Phantom 3 Advanced System Specs

Aircraft

Weight (including battery and propellers) - 1280 g

Diagonal size (including propellers) - 590 mm

Max Ascent Speed - 5 m/s

Max Descent Speed - 3 m/s

Hover Accuracy: Vertical: +/- 0.1 m (when Vision Positioning is active) or +/- 0.5 m; Horiz: +/- 1.5 m

Max Speed - 16 m/s (ATTI mode, no wind)

Max Altitude Above Sea Level - 6000 m

Operating Temperature - 0°C to 40°C

GPS Mode - GPS/GLONASS

Remote Controller

Operating Frequency - 2.400 GHz-2.483 GHz

Max Distance - 2000m (outdoors and unobstructed)

Video Output Port - USB

Operating Temperature - 0°C- 40°C

Battery - 6000 mAh LiPo 2S

Mobile Device Holder - For tablet or phone

Receiver Sensitivity (1%PER):-101 dBm ±2 dBm

Transmitter Power (EIRP) - FCC: 20 dBm CE: 16 dBm

Working Voltage - 1.2 A @7.4 V

Full User Manual available at http://www.dji.com/product/phantom-3/download

Attachment D: DJI Phantom 3 Professional System Specs

Aircraft

Weight (including battery and propellers) - 1280 g

Diagonal size (including propellers) - 590 mm

Max Ascent Speed - 5 m/s

Max Descent Speed - 3 m/s

Hover Accuracy: Vertical: +/- 0.1 m (when Vision Positioning is active) or +/- 0.5 m; Horiz: +/- 1.5 m

Max Speed - 16 m/s (ATTI mode, no wind)

Max Altitude Above Sea Level - 6000 m

Operating Temperature - 0°C to 40°C

GPS Mode - GPS/GLONASS

Remote Controller

Operating Frequency - 2.400 GHz-2.483 GHz

Max Distance - 2000m (outdoors and unobstructed)

Video Output Port - USB

Operating Temperature - 0°C- 40°C

Battery - 6000 mAh LiPo 2S

Mobile Device Holder - For tablet or phone

Receiver Sensitivity (1%PER):-101 dBm ±2 dBm

Transmitter Power (EIRP) - FCC: 20 dBm CE: 16 dBm

Working Voltage - 1.2 A @7.4 V

Full User Manual available at http://www.dji.com/product/phantom-3/download