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

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

May 12, 2015

Exemption No. 11569
Regulatory Docket No. FAA–2015–0390

Mr. George Riethof
Nantucket Aerial
31 Miacomet Avenue
Nantucket, MA 02554

Dear Mr. Riethof:

This letter is to inform you that we have granted your request for exemption. It transmits our decision, explains its basis, and gives you the conditions and limitations of the exemption, including the date it ends.

The Basis for Our Decision

By letter dated February 15, 2015, you petitioned the Federal Aviation Administration (FAA) on behalf of Nantucket Aerial (hereinafter petitioner or operator) for an exemption. The petitioner requested to operate an unmanned aircraft system (UAS) to conduct aerial still photography.

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 and DJI Phantom 2+.

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 21and any associated noise certification and testing requirements of part 36, is not necessary.

The Basis for Our Decision

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

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

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

Our Decision

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

Conditions and Limitations

In this grant of exemption, Nantucket 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 Phantom 2 and DJI Phantom 2+ 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 May 31, 2017, unless sooner superseded or rescinded.

Sincerely,

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

Nantucket Aerial, Nantucket, MA- Section 333 Exemption Petition

February 15, 2015

US Department of Transportation
Docket Management System
1200 New Jersey Ave, SE
Washington, DC 20590

Electronically submitted via www.regulations.gov

Re: Exemption Request Section 333 of the FAA Reform Act of the Federal Aviation Regulations from 14 C.F.R. 45.23(b); 14 C.F.R. Part 21; 14 C.F.R. 61.113(a)&(b); 91.7(a); 91.9(b) (2); 91.103(b); 91.109; 119.121; 91.151(a); 91.203(a)&(b); 91.405(a); 91.407(a) (1); 91.409(a) (2); 91.417(a)&(b)

Dear Sir or Madam,

George Riethof, dba Nantucket Aerial, seeks exemption pursuant to FAA Modernization and Reform Act of 2012 and the procedures contained within 14 C.F.R. 11, from the Federal Aviation Regulations ("FARs") listed below so that Nantucket Aerial may operate their small ultra-light weight unmanned aircraft system ("UAS") commercially in airspace regulated by the Federal Aviation Administration ("FAA"). This petition is, in most regards, similar to granted exemption No. 11138 both in operational approach (closer than 500') and equipment being utilized (DJI Phantom 2+).

As described herein Nantucket Aerial proposes to perform aerial still photography with the use of a common hobby-grade UAS, presently a DJI Phantom 2+, mostly for real estate advertising purposes.

Nantucket Aerial's exemption request would permit operation of ultra-light weight, unmanned and relatively inexpensive UAS in tightly controlled and limited airspace.

Nantucket Aerial's proprietor, George Riethof, is an FAA-certificated commercial pilot, flight instructor, who has about 10 years experience as a Part 135 charter captain, in addition to 25 years as an aircraft owner. All Nantucket Aerial UAV operations will be conducted or directly supervised by Mr. Riethof utilizing the knowledge, skill, and risk management approach associated with the above experience.

For the reasons stated below, Nantucket Aerial respectfully requests the grant of an exemption allowing operation of ultra-light weight, remote controlled UAS primarily to supplant the existing aerial photography workflow but also to serve the substantial demand for aerial still images found to be prevalent in the local real estate market.

Nantucket, Martha's Vineyard, and Cape Cod are major summer vacation destinations, with substantial increases in air traffic in the summer months. The summer vacation season is concentrated mostly in the months of June, July, and August, but with 'shoulder seasons' before

and after these months. It is during these times when traffic counts at the local airports rise to their highest levels. It is in the public interest of safety that operators of UAV systems maintain maximum vigilance to prevent the potential for accidents or incidents. Nantucket Aerial proposes to enhance safety in the local environment by applying sound risk-evaluation and management principles to the operation.

Contact Information:

George Riethof
31 Miacomet Ave
Nantucket, MA 02554

ph: 508-228-2650
fax: 617-249-1672

email: george@overnantucket.com
web: www.overnantucket.com

The Specific sections of Title 14 of the Code of Federal Regulations from which Nantucket Aerial requests exemption: 14 CFR 21; 14 C.F.R. 45.23(b); 14 CFR 61.113 (a) & (b); 14 C.F.R. 91, et seq.; 14 CFR 407 (a) (1); 14 CFR 409 (a) (2); and, 14 CFR 417 (a) & (b). III.

The extent of relief Nantucket Aerial seeks and the reason they seek such relief:

Nantucket Aerial submits this application in accordance with the Reform Act, 112 P.L. 95 §§ 331-334, seeking relief from any currently applicable FARs operating to prevent commercial cinematic and other flight operations within the national airspace system. The Reform Act in Section 332 provides for such integration of civil unmanned aircraft systems into our national airspace system as it is in the public's interest to do so. Nantucket Aerial's, ultra-light weight UAS meets the definition of "small unmanned aircraft" as defined in Section 331 and therefore the integration of their ultra-light weight UAS is expressly contemplated by the Reform Act. Nantucket Aerial would like to operate its ultra-light weight UAS prior to the time period by which the Reform Act requires the FAA to promulgate rules governing such craft. The Reform Act guides the Secretary in determining the types of UAS's that may operate safely in our national airspace system. Considerations include: The weight, size, speed and overall capabilities of the UAS's; whether the UAS will be operated near airports or heavily populated areas; and, Whether the UAS will be operated by line of sight. 112 P.L. 95 § 333 (a). Each of these items are in favor of an exemption for Cobblestone Realty. Their UAS utilizes four (4) counter-rotating propellers for balance, control and stability. Their UAS is equipped with GPS and auto return safety technology. Weighing less than ten (10) pounds (far below the maximum 55 pound limit); including camera.

Operational considerations:

Nantucket Aerial proposes to operate the UAS in the Nantucket, Martha's Vineyard, Cape Cod, and South Coast, Massachusetts areas. These areas are primarily served by the towered airports at Nantucket (KACK), Martha's Vineyard (KMVY), Hyannis (KHYA), Cape Cod Coast Guard Air Station

(KFMH), and New Bedford (KEWB). Other smaller non-towered airports are also prevalent. Most of the flight operations will be conducted on clear, VFR days, typically between the hours of 7am and 8pm. Nearly all operations will be conducted below 500 feet. The ideal altitudes to conduct the operations are typically below 300 feet, however. The duration of a single photo shoot typically runs for up to ½ hour.

Operational Risk Management:

Nantucket Aerial proposes to reduce operation risk by the following procedures, among others:

1. Contacting the local Air Traffic Control (ATC) tower, typically one day prior to the operation, identifying the location of the flight operation with respect to local known landmarks, GPS coordinates or location in relation to navigational aids such as VORs, NDBs or intersections.

2. Identifying the planned time, nature, and altitudes associated with the operation.

3. Utilizing an AM handheld transceiver (HT) such as the Vertex Standard VXA-700, to monitor ATC communications with local air traffic, and to establish radio communication with the tower, if needed. If in the vicinity of a non-towered airport, to monitor air traffic flying in the vicinity.

4. Prior to the event, identify the runways in use at the time of the shoot and ascertain typical traffic flow patterns.

5. Avoid the busiest air traffic time intervals, which typically fall on Fridays and Monday mornings in the summer months, with secondary times of Thursday afternoon and Sunday afternoon.

With respect to the Nantucket and Martha's Vineyard airports, these airports are surrounded by substantial open space (Martha's Vineyard's state forest, Nantucket's Middle Moors) and bodies of water (the Atlantic Ocean south of Nantucket Airport), so it is unlikely that any operations will take place in substantial proximity to these airports so as to require unusual coordination with ATC.

Reasons why approval of Nantucket Aerial's application will serve the public benefit:

1. Operations will be conducted by an experienced commercial pilot and aircraft owner, who is intimately familiar with the local airspace, local flight operational considerations, landmarks, and ATC procedures.

2. Use of the industry-standard DJI Phantom 2+, which features tested and proven safety characteristics.

3. Application of operational-risk methods similar to those applied to Part 135 commercial operations on a flight-by-flight basis.

4. Operation almost entirely in very clear day VFR weather.

5. Operational location of sites typically along the waterfront or away from towered and non-towered airports.

6. Operation almost entirely below 400 feet AGL.

7. Maintenance of communication capability via HT.

8. The UAS to be used (DJI Phantom 2+) has 'first-person-view' (FPV) capability. However, all operations of the UAS will be conducted using line-of-sight. FPV is useful in framing and evaluating position with respect to the desired photographs. However, use of FPV for flight control rarely offers sufficient image quality, particularly on a very bright VFR day, to utilize for aircraft control beyond line-of-sight. Therefore, all operations will be conducted strictly line-of-sight.

9. It is believed that local real estate offices utilize UAS', or contract with operators of UAS' in furtherance of their real estate listing activities. These operators are either hobbyists, or are the real estate agents themselves. This application, if approved, will help ensure safety by ensuring that the operations are conducted in accordance with FAA regulations by an experienced FAA-certificated commercial pilot.

Sample operational risk management procedure:

1. Pre-operation: at least 24 hours prior to operation:

a. Contact ATC tower manager, and identify location of shoot with respect to local known ATC landmarks. Identify time frame of shoot, identification of UAS, and communications capability of pilot (i.e. radio, cell phone).

b. Obtain complete weather briefing via approved weather information providers, as one would for a commercial Part 135 flight.

2. Day of operation:

a. Examine site of operation via online mapping, such as the town GIS map applications. Sample:

http://www.mapgeo.com/NantucketMA/

b. Ascertain runway in use and traffic patterns being used via Flightaware.com, by monitoring ATC tower frequency, etc.

c. Upon arrival at site, observe traffic patterns in area, and monitor ATC frequency at all times.

d. Utilize operations checklist for UAS.

e. Conduct safety inspection of UAS.

f. Test UAS and obtain good GPS signal prior to flight.

g. Use safety observer if in an area of high population concentration i.e. 'in town'.

e. While monitoring ATC, in the unlikely event that the operation is perceived to be in conflict with any air traffic, cease operation.

Summary:

Nantucket Aerial requests exemption from 14 CFR 21; 14 C.F.R. 45.23(b); 14 CFR 61.113 (a) & (b); 14 C.F.R. 91, et seq.; 14 CFR 407 (a) (1); 14 CFR 409 (a) (2); and, 14 CFR 417 (a) & (b)., for the purpose of conducting safe operation of a DJI Phantom 2+ UAS in the general area of Nantucket, Martha's Vineyard, Cape Cod, and the South Coast, Massachusetts areas. Nantucket Aerial proposes to maximize safety through Operational Risk Management procedures comparable to those applied to Part 135 commercial operations in which Nantucket Aerial is experienced and familiar.

This application is similar to other approved or pending applications centered on Real Estate photography operations utilizing the DJI Phantom 2 or Phantom 2+. The applicant believes the FAA is familiar with the aircraft capability so the flight manual for the aircraft is not included herewith, but can be provided on request. The manual is available at:

http://download.dji-innovations.com/downloads/phantom_2_vision_plus/en/Phantom_2_Vision_Plus_User_Manual_v1.8_en.pdf

Respectfully submitted,

George Riethof
proprietor, Nantucket Aerial
31 Miacomet Ave
Nantucket, MA 02554