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

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

August 14, 2015

Exemption No. 12475
Regulatory Docket No. FAA−2015−0968

Mr. Robert L. Marx
ViewsAbove
6804 Balsam Lane North
Maple Grove, MN 55369

Dear Mr. Marx:

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

By letter dated June 6, 2015, you petitioned the Federal Aviation Administration (FAA) for an exemption. You requested to operate an unmanned aircraft system (UAS) to conduct aerial still and video data capture, photography, videography, surveying, and inspections.

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 Yuneec Q500 Typhoon.

In accordance with the statutory criteria provided in Section 333 of Public Law 112−95 in reference to 49 U.S.C. § 44704, and in consideration of the size, weight, speed, and limited operating area associated with the aircraft and its operation, the Secretary of Transportation has determined that this aircraft meets the conditions of Section 333. Therefore, the FAA finds that relief from 14 CFR part 21, *Certification procedures for products and parts,*

Subpart H—Airworthiness Certificates, and any associated noise certification and testing requirements of part 36, is not necessary.

The Basis for Our Decision

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

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

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

Our Decision

In consideration of the foregoing, I find that a grant of exemption is in the public interest. Therefore, pursuant to the authority contained in 49 U.S.C. 106(f), 40113, and 44701, delegated to me by the Administrator, Mr. Robert L. Marx is granted an exemption from 14 CFR §§ 61.23(a) and (c), 61.101(e)(4) and (5), 61.113(a), 61.315(a), 91.7(a), 91.119(c), 91.121, 91.151(a)(1), 91.405(a), 91.407(a)(1), 91.409(a)(1) and (2), and 91.417(a) and (b), to the extent necessary to allow the petitioner to operate a UAS to perform aerial data collection. This exemption is subject to the conditions and limitations listed below.

Conditions and Limitations

In this grant of exemption, Mr. Robert L. Marx is hereafter referred to as the operator.

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

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

1. Operations authorized by this grant of exemption are limited to the Yuneec Q500 Typhoon 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 August 31, 2017, unless sooner superseded or rescinded.

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

Enclosures

June 6, 2015

U. S. Department of Transportation
Docket Management System
800 Independence Ave. SW
Washington, DC 20591

Re: Section 333 of the FAA Reform Act of 2012
Public Docket No. FAA-2015-0968

Dear Administrator,

I, Robert L. Marx, herein referred to as (the petitioner), am writing pursuant to the FAA Modernization and Reform Act of 2012 and the procedures contained within 14 C.F.R. 11, to request that the petitioner, Robert L. Marx, an owner and operator of a small unmanned aircraft system (sUAS), petition for exemption from the Federal Aviation Regulations listed below and any regulation as required by the FAA that is deemed necessary in order to conduct commercial UAS operations as described.

The requested exemption would permit the petitioner to pursue, safe, professional, for profit services to private and public entities within the State of Minnesota and adjoining states, utilizing a small unmanned aircraft system (sUAS) for aerial still and video data capture for, but not limited to the following purpose:

*Real Estate Sales
*Residential/Commercial Roof inspections/Flare Stack inspections
*Property/Environmental Video Survey
*Photo/Videography of rural contracted outdoor recreational activities on private and public use lands (Prior Permission and coordination Only)
*Fire Survey and Rural Search Assist to local public and private entities.

The safe integration of the UAS into the national airspace without interference or hazard to manned aircraft is of utmost importance. The proposed services are offered with the intent of enhancing the development and safe operation of unmanned aircraft systems, realizing that current manned aircraft operations pose a much greater risk of personal injury and or death and extensive property damage. The use of UAS would fulfill a service to consumers and small entities that would otherwise not exist due to the risks and costs involved with manned aircraft.

The initial (sUAS) to be utilized during the operations is a consumer class helicopter, quad-rotor aircraft. It is manufactured by Yuneec, Inc. and has the manufactures model designation Q500 Typhoon. It is an advanced (sUAS) with state of the art safety features, GPS lock, altitude, position hold stabilization, smart mode, angle mode follow me and return to home mode. The ground station has telemetry with altitude, groundspeed, GPS location and battery life for both the transmitter and aircraft as well as an audible and vibration alert for aircraft low battery. Aircraft LED visual alert indicators for low battery, GPS loss, and communication loss. The UAS has a first person view on the controller that **is not to be used** for flight by the PIC. The

UAS has the ability to link with a smartphone or tablet for video link separate from the on-board display if needed. The UAS has separate radio frequencies for telemetry and video downlink and aircraft control. See the following manufactures specifications.

Yuneec Q500 Typhoon, quad copter

Flight Time Up to 25 Minutes
Height 240mm (9.45 in)
Width 420mm (16.54 in)
Diagonal Length W\O Rotor Blades 565mm (22.2 in)
Propeller/Main Rotor Diameter 330mm (13.0 in)
Weight W/O and Payload 1130g (40.0 oz)
Battery 5400mAh 3S 11.1V LiPo
3 Flight Modes Smart, Angle and Home Modes
Maximum Flying Height Default 400 Feet AGL (Adjustable via the Q500 GUI)
Maximum Rotational Velocity 65°/s
Maximum Bank Angle 35°
Maximum Climb Rate in Smart and Angle mode 3m/s
Maximum Descent Rate in Smart and Angle mode 2m/s
Takeoff Weight with Battery and CGO2-GB 1700g (60.0 oz)

Radio Control Frequency Band 2.4GHz
Maximum Groundspeed 15 MPH

ST10 Personal Ground Station

Operating System Android™
Number of Channels 10
Control Transmission Distance/Range FCC Compliance: Up to 800m (2624.67 ft)

CE Compliance: Up to 400m (1312.34 ft)
Robust Radio Control Modulation Yuneec Protocol
Video link Frequency Band 5.8GHz
Video Transmission Distance/Range (Optimum Conditions)

FCC Compliance: Up to 600m (1968.5 ft)
CE Compliance: Up to 300m (984.252 ft)
Warning: You Must Follow Local Laws and Maintain Visual Line of Sight of Aircraft at All Times.
Flight Systems Telemetry Data On Screen Display (OSD) Yes
LED Backlit LCD Screen Capacitive Multi-Touch 4.5”
Tactile (Vibrating) and Audible Feedback Yes
Built-In LiPo Battery Voltage / Capacity 3.6V/5200mAh 18.72Wh

CGO2-GB Camera Gimbal System

Focusing System Aerial Optimized Fixed Focus
Video Field of View 130°
Transmission Band 5.8GHz

Video Transmission Distance/Range FCC Compliance: Up to 600m (1968.5 ft)
CE Compliance: Up to 300m (984.252 ft) with ST10

UAS's are often seen as superior to manned helicopters due to the smaller size and lower costs, reduced noise and as such, a much smaller environmental and safety impact.

The petitioner requests exemption to operate a Yuneec, Q500 Typhoon equipped with a three-axis CGO2 Gimbal and Camera, both products of Yuneec. This sUAS has a pre-programmed limit for the altitude above ground level at 400 feet and a Geo fence while in Smart Mode with a distance limit of 300 feet from the controller. These limits are preset at the factory and will be kept at those limits, which currently comply with the AMA's and FAA requirement for Visual Line of Sight limitation and an AGL limitation. The ground station is also programmed with a safety feature that disables motor start up if within Class B, and C airspace boundaries. The Q500 also has the failsafe-automated feature of return to home in the event that communication is lost between the ground station and the aircraft.

In addition to the requirements already set forth by C.F.R. Title 14 and the applicable FAR, The petitioner will--

1. Only operate its UAS in direct visual line of sight of the pilot and observer without use of a visual aid other than corrective lenses.
2. Operate at an altitude no greater than 400 feet above the ground.
3. Operate with due vigilance and known practiced see and avoid scanning techniques to avoid any conflicts with manned or other UAS aircraft that may enter the UAS operating area. The UAS flight will be immediately terminated if a potential conflict may exist.
4. Operate over private or public sites only with prior permission from property owner or owner's agent or legal authorities as allowed by law.
5. Terminate flight when any unsafe condition exists.
6. Terminate flight when battery voltage drops to 30% of battery capacity or when the 1st low battery alert occurs per the Q500 Typhoon Instruction Manual, not to exceed 18 minutes run time.
7. Operate at a ground speed of 0 to 15 mph during on site missions.
8. Operate in accordance with the guidance and standards set forth by the AMA, the UAS manufacturer and the administrator.
9. Operate with a minimum crew for each operation consisting of the PIC and a visual observer in direct communication utilizing appropriate verbal, radio or cell phone as needed.
10. Provide ground instruction with standards and content currently accepted by the administrator for private pilot knowledge testing, to the observer and or UAS.

The petitioner requests exemption from 14 CFR part 61.113 Private Pilot Privileges, Pilot in Command Section (a). An exemption is requested because no PIC will be allowed to operate the sUAS unless that PIC has met certain flight-hour currency requirements, demonstrating that the PIC is able to safely operate the sUAS in a manner consistent with the operations and specifications as described in this exemption, including evasive and emergency maneuvers, as well as maintaining appropriate distances from people, vessels, vehicles and structures. Further, the petitioner submits that all flights of the sUAS, conducted by the PIC pursuant to the grant of

this petition: (1) will be incidental to the business of ViewsAbove; and (2) will not carry passengers or property for compensation or hire.

Title 14 CFR part 91.7(a) Civil Aircraft Airworthiness. As no Airworthiness Certificate is available for this sUAS the petitioner requests exemption under this part utilizing a preflight inspection and the manufacturer's documents for determining compliance of the sUAS airworthiness. The petitioner warrants compliance to part 91.7(b) in that the operation will only be conducted after a thorough preflight and pre-mission planning inspection is completed, to include current and forecast weather, airspace, notams, area of operations, and notice issued to non-participating persons in local proximity. The petitioner will utilize the Yuneec, Q500 Instruction manual, quick start guide and the petitioners own pre-flight checklist included in the attached supplements to determine the sUAS airworthiness.

The petitioner requests exemption from 14 CFR part 91.119(c) Minimum Safe Altitudes. The petitioner requests exemption from Section (c) with the following conditions and limitations. The petitioner requests the exemption due to the scope of the operations to be performed and the requirement to operate below 400 feet AGL. The Petitioners primary mission would be to record data or survey of persons, property or structures as listed above. The sUAS size, weight, speed and limited operating times and area, as well as the soft materials used in the construction of the sUAS, would provide an equivalent or greater level of safety as intended under this part.

The Q500 is a helicopter as defined by CFR Title 14, FAR Part 1, general definitions. The sUAS has a vertical to near vertical descent in the event of a power failure. Fly-a-ways would be the greatest or most dangerous risk to non-participating persons. The Q500 has no documented (fly-away), while operated under GPS lock within the parameters of the Q500 operating instructions. The Q500 is a very stable, low rotor speed sUAS that maneuvers, under GPS lock, relatively slow compared to similar sized UAS. In an emergency the sUAS would be quickly brought down per the loss of control procedure as described in the emergency procedures checklist, adequate time to complete the procedure would exist due to the 0 to 15 mph operational groundspeed of the Q500. The risk to persons 100 feet away would be at no greater risk than persons located 500 feet away. The petitioner requests exemption from the 500-foot altitude restriction and the 500-foot standoff restriction from persons, property or vessel applied to previous grants of exemptions. The exemption is requested with the following conditions and limitations in conducting the petitioners operations—

1. The sUAS will be operated at an altitude of no more than 400 feet above ground level.
2. The sUAS will not be operated at greater than a 400-foot slant distance from the PIC.
3. The sUAS will not be operated over any non-participating person.
4. The sUAS will not be operated over a non-participating property, structure or vessel without prior permission from the property owner or legal representative.
5. The sUAS will maintain a minimum slant distance of 100 feet from any non-participating person and will increase the distance proportionally by 50 ft. per 50 ft. of altitude. At no time will the sUAS be operated closer than a 100-foot slant distance

to a non-participating person unless that person is behind a protective barrier or shielded from possible debris in the event of a crash.

6. A minimum of 2 hour notice will be distributed to all residences or businesses of a scheduled operation in an urban business or residential area within 500 feet of the operation, informing of the time, location and safety hazards to persons or property, the notice will include a phone number to voice objections or concerns.
7. Warning signs will be displayed on the perimeter of the safety zone to alert passers-by of the hazard and warning to stay back and behind cover. If the safety zone is breeched, flight will be immediately terminated.
8. The sUAS will be operated over public rural lands with the same standoff distance and altitude restrictions afforded persons, property and vessels per e. above.

The petitioner requests exemption from 14 CFR Part 91.121, Altimeter settings. The UAS will not have a typical barometric altimeter onboard the aircraft, the petitioner intends to operate the UA within VLOS and at or below 200 feet AGL, combined with the petitioner's intention to limit the altitude of the UAS through flight limit function on the UAS, has been previously ruled to be a sufficient method for ensuring the UAS operations do not adversely affect safety. The altitude information will be generated by GPS equipment installed onboard the aircraft, and/or a static pressure sensor (barometer), which aids in estimating the altitude.

The petitioner requests exemption from 14 CFR Part 91.151, Fuel requirements for flight in VFR conditions, prior relief has been granted for manned aircraft to operate at less than the prescribed minimums, including Exemption Nos. 2689, 5745, and 10650. In addition, similar UAS-specific relief has been granted an Exemption Nos. 8811, 10808, and 10673 for daytime, Visual Flight Rules (VFR) conditions. The petitioner's UAS provides low battery warnings that indicate the PIC must command the UA's return to the launch point when low battery capacity voltage is reached. The UAS also provides 2 and 3rd increased intensity critical low battery warnings through audio and vibration indicating that the UA must be landed immediately, additionally a failsafe automatic landing will occur when the battery is at absolute critical low voltage. The petitioner warrants that the sUAS will be landed immediately upon the 1st low battery alert or no longer than 18 minutes whichever occurs first. The petitioner will not initiate a flight unless (considering wind and forecast weather conditions) there is enough power to fly at normal cruising speed to the intended landing point and land the UA with 30% battery power remaining.

The petitioner requests exemption from 14 CFR Subpart E (§§ 91.401-417),) Maintenance required, 91.407(a)(1) Operation after maintenance, preventive maintenance, rebuilding, or alteration, 91.409(a)(1) and (2) Inspections, and 91.417(a) and (b) Maintenance records. Currently the manufacturer's maintenance procedures govern preflight with no limits other than one condition. The petitioner will complete all authorized component replacements at the petitioner's base of operations or in the field as required. The manufacturer or authorized repair center will complete any maintenance or repairs that cannot be completed by the petitioner. The petitioner warrants that preflight, post flight and maintenance procedures should provide an acceptable level of safety for the operations performed and is consistent with those of previous grants. (see below) In addition the petitioner will comply with any and all manufacturers updates

for UAS and Ground station as well as any FAA directives and guidelines. An appropriate aircraft/maintenance logbook will be kept with the sUAS ground station and base of operations.

Arrival Checklist

1. If day and operating out of back of vehicle, point vehicle into sun.
2. Remove case and place on level surface.
3. Check distance to nearest airport and/or controlled airspace using smartphone or tablet app.!
4. If required, use VHF aviation transceiver, to contact tower of field if closer than 5 NM.!
5. Inform tower / CTAF of UAS ops, location, and max height of flight.!

Preflight Checklist

1. Remove transmitter.!
2. Router - On!
3. Transmitter - On!
4. Toggle Switches - Full Up!
5. Video Monitor - On!
6. Remove UAS from case.!
7. Gimbal Lock & Lens Cap - Removed!
8. Micro-SD card - Inserted.!
9. UAS Battery - Inserted!
10. Place UAS in clear and safe launch and recovery position if it returns to home.!
11. UAS Battery - On!
12. Wifi Connection to Monitor - Verified!
13. DJI Application - Load!
14. DJI application - Connect to Camera!
15. SD Card - Format!
16. Camera - Full Up!
17. Satellite Connections - Verified!
18. Charge Levels - Safe for Flight!
19. Video Recording - Start!
20. Takeoff

After Takeoff Checklist

1. Hover approximately 10 feet above the ground to confirm that UAS is under control.
2. All control sticks operate correctly while in hover. Verified!

Pre-landing Checklist

1. Camera – full up
2. Video – stop
3. Landing zone – clear, safe

Post-landing Checklist – Returning to Flight Immediately

1. Battery – remove and replace if necessary
2. Wifi connection to monitor – verified
3. Connection to camera – verified
4. Takeoff

End of Ops Checklist

1. Battery in UAS – off
2. Transmitter – off
3. Notify Tower – end of ops

Summary

Granting the present Petition will further the public interest by allowing the petitioner to safely, efficiently, and economically perform aerial video and photography of real estate, environmental sites, and outdoor recreational facilities. Additionally, the use of the Yuneec Q500 UAS will decrease congestion of the NAS, reduce pollution, and provide significant benefits to the economy.

1. The Public Will Benefit From Decreased Congestion Of The NAS.

The Yuneec Q500 is battery powered and serves as a safe, efficient, and economical alternative to the manned aircraft traditionally utilized to obtain aerial imagery. By reducing the amount of manned aircraft needed to perform aerial acquisitions, an exemption allowing the use of a Yuneec Q500 UAS would reduce the amount of manned aircraft in the NAS, reduce noise and air pollution, as well as increase the safety of life and property in the air and on the ground.

Furthermore, by reducing the number of manned aircraft operating in the NAS, congestion around airports caused by arriving and departing aircraft will be reduced. The UAS does not require an airport to takeoff or land. Likewise, a reduction of manned aircraft conducting aerial video and photography missions would result in fewer aircraft that must be handled by air traffic control.

2. The Public Will Benefit From The Safety And Efficiency Of The Yuneec Q500 UAS

Conducting aerial acquisitions with the Q500 instead of manned aircraft, will greatly benefit the public by drastically reducing the levels of air and noise pollution generated during traditional aerial video and still photography flight operations. By using battery power and electric motors, the Q500 UAS produces no air pollution, and is the most viable environmentally conscious alternative to the cabin class, six cylinder internal combustion engine aircraft that are typically utilized for aerial video and photography, while burning approximately 20-30 gallons per hour of leaded aviation fuel. The DJI Phantom 2 and DJI Inspire 1 UAs, while reducing the carbon footprint of aerial acquisitions, also

eliminates noise pollution, as the UAs are propelled by battery powered electric motors, rather than an internal combustion engine.

By using the Q500 UAS to perform aerial acquisitions, the substantial risk to life and property in the air and on the ground, which is usually associated with traditional manned aircraft flight operations, will be substantially reduced or completely eliminated. Aside from the lack of flight crew members located onboard the aircraft, the Q500 has less physical potential for collateral damage to life and property on the ground, and in the air, compared to the manned aircraft that typically conduct similar operations.

3. Performing Aerial Video and Photography Operations With The Yuneec Q500 UAS Will Benefit The Economy.

In addition to being safe and efficient, the Q500 UAS is also an economical alternative to using manned aircraft to conduct similar aerial operations. As such, operation of the Q500 will allow United States based companies, like ViewsAbove, to remain competitive and contribute to growth of the U.S. economy. Specifically, with the rising cost of aviation fuel and the Environmental Protection Agency ("EPA") regulatory actions phasing out leaded aviation fuels, U.S. owned and operated companies must adopt new and alternative technology in order to remain competitive. Operating the battery Q500 UAS is one such technology that not only allows companies greater operational flexibility compared to manned aircraft, but provides such flexibility without the high operational cost of a traditional manned aircraft.

By operating the Q500 UAS, companies such as ViewsAbove, can remain competitive and profitable, and therefore, provide greater job stability to employees and contractors, which will ultimately contribute to growth of the U.S. economy. Improved financial performance of U.S. companies, through commercial use of the Q500 UAS provides a stable workforce that increases consumer spending; improves local, state, and federal tax revenues; and allows companies to invest in research and development in order to remain competitive both in the United States and abroad.

4. There Are No Privacy Issues.

Similar to the manned aerial acquisition flight operations that have been conducted for decades, the petitioner's proposed operation of the Q500 UAS will not implicate any privacy issues. Specifically, the Q500 UAS will be operated only in compliance with operating documents and procedures which requires property owner involvement as well as local law enforcement notification, and in accordance with the Federal Aviation Regulations, including the minimum altitude requirements of 14 C.F.R. §

Sincerely,

Robert L. Marx
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