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

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

September 24, 2015

Exemption No. 12979
Regulatory Docket No. FAA−2015−2746

Mr. Kevin Kieran Gallagher
Owner
Stonewater Photo
36 South Kerema Avenue
Milford, CT 06460

Dear Mr. Gallagher:

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 26, 2015, you petitioned the Federal Aviation Administration (FAA) on behalf of Stonetower Photo (hereinafter petitioner or operator) for an exemption. The petitioner requested to operate an unmanned aircraft system (UAS) to conduct aerial photography and videography for real estate.

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 Vision+ and a DJI Inspire 1.

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, Stonewater Photo 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, Stonewater Photo 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 DJI Phantom 2 Vision+ and DJI Inspire 1 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 October 31, 2017, unless sooner superseded or rescinded.

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

Enclosures

Stonetower Photo
36 South Kerema Avenue Milford, CT 06460

June 26, 2015

Docket Operations, M-30
U.S. Department of Transportation
1200 New Jersey Ave, SE
Room W12-140, West Ground Floor
Washington, DC 20590-0001

SUBJECT: Petition for Section 333 Exemption of the FAA Modernization and Reform Act of 2012

I, Kevin Kieran Gallagher, of 36 South Kerema Avenue Milford, CT 06460, hereby petition the FAA for an exemption from various sections of 49 USC of Federal Aviation Regulations.

I am the owner of Stonetower Photo of 36 South Kerema Avenue Milford, CT 06460; and I will be the Pilot in Charge of all aerial photography, following approval of this request.

Pursuant to Section 333 of the FAA Modernization and Reform Act of 2012, Public Law 112-95, I request certain exemptions in order to conduct aerial photography and videography (henceforth meaning still and/or video) of real properties (real estate) operating a DJI Phantom 2 Vision + and a DJI Inspire 1 unmanned aerial systems.

Sincerely

Kevin Kieran Gallagher
36 South Kerema Avenue
Milford, CT 06460

Overview:

I, Kevin Kieran Gallagher, of 36 South Kerema Avenue Milford, CT 06460, hereby petition the FAA for an exemption from various sections of 49 USC of Federal Aviation Regulations.

I am the owner of Stonetower Photo of 36 South Kerema Avenue, Milford CT 06460; and I will be the Pilot in Charge of all aerial photography and videography, following approval of this request.

Pursuant to Section 333 of the FAA Modernization and Reform Act of 2012, Public Law 112-95, I request certain exemptions in order to conduct commercial aerial photography and videography (henceforth meaning still and/or video) of real properties (real estate) operating a DJI Phantom 2 Vision+ and a DJI Inspire 1 unmanned aerial systems.

The Phantom 2 Vision+ consists of four DC motors with rotors, powered by a DJI 5200mAH LiPo battery, and managed by an onboard flight control system that is remotely accessed by the Pilot in Charge using a portable control unit.

The DJI Inspire 1 consists of four DC motors with rotors, powered by a DJI 4500mAh 22.2V LiPo battery, and managed by an onboard flight control system that is also remotely accessed by the Pilot in Charge using a portable control unit.

The DJI Phantom 2 Vision+ remote control unit is a wireless communication device using a 5.728 GHz – 5.85 GHz frequency band. The DJI Inspire 1 remote control unit uses a 5.725-5.825 frequency band. Both frequencies are approved by the FCC for limited-range communication purposes.

The Phantom 2 Vision+ has a maximum takeoff weight of 2lbs. 11.8oz. including battery and propellers. This UAV has a top speed of 35 mph. For my purposes, the top speed need not exceed 17 mph. The manufacturer, DJI, regularly updates software and firmware.

The DJI Inspire 1 has a maximum takeoff weight of 6lbs. 7.5oz. including battery and propellers. This UAV has a top speed of 49 mph. Again, for my purposes, the top speed need not exceed 17 mph. The manufacturer, DJI, regularly updates software and firmware.

As a licensed pilot and professional photographer, I am extremely sensitive and aware of the importance of safety and privacy. I believe safety is the first and overriding priority in regards to operating a UAV in the National Airspace. Additionally, I would not operate a UAV in a manner as to invade the privacy of anyone unaware of our flight intentions.

I, Kevin Kieran Gallagher, will only use the UAV in daytime and only to enhance real estate marketing for realtors in Connecticut showing views of properties currently unattainable by still or aviation photography. I will operate the UAVs in a safe manner, using the following pre-flight checklist and operating procedures to determine that the aircraft is physically and electronically ready for safe flight and that permission from the property owner/representative/business owner is received.

Pre-flight Checklist (DJI Phantom 2 Vision+ and DJI Inspire 1):

- If required, notify the appropriate FAA facility of our launch schedule and location.
- Survey the property for hazards - trees, utility poles and other elements that might compromise the flight, then make a judgment as to whether to proceed.
- Check the weather for wind speed, cloud cover, and any forecast changes that might adversely affect flight safety and performance.
- Examine the aircraft - looking at connections and searching for cracks and/or loose parts.
- Determine that the electronic elements are performing correctly (receiving more than six GPS signals along with calibration of the magnetic compass.
- Determine that the barometric altimeter reflects approximately 0 feet AGL.
- Following takeoff, I will hover at an altitude of approximately 10 feet AGL to assure the Home Point is marked.
- I will exercise all controls to confirm their functionality - if one of the controls is not functioning, the flight will be terminated immediately.
- I will fly only with a Visual Observer (VO) at my side who will provide a second set of eyes to assist in observing possible flight hazards and help assure the UAV remains in Visual Line of Sight (VLOS) of PIC. Since purchase of the Phantom 2 Vision+/Inspire 1, all training and skill improvement flights have been with the same VO.
- I will not fly over or near dense automobile traffic or crowds.
- I will give right-of-way to any manned aircraft.
- I will stay clear of FAA controlled airspace at airports (generally a five nautical mile radius) as well as restricted and prohibited zones.

- I will fly no higher than 400' AGL and no further than 1000' from the Home Point, recognizing that the primary responsibility is to keep the aircraft safely within VLOS.
- I will stay clear of clouds and fog (500' vertically and 2,000' horizontally).
- I will perform a post-flight check of the UAV to determine its physical and electronic condition.

Operating Procedures:

- After receiving permission from the property owner/representative/business owner, I will notify all adjacent property owners/business owners of our intentions and anticipated time on site.
- I will not fly over neighboring properties unless permission is granted.
- I will keep individuals not involved in the flight at a safe distance (500' feet if practical).
- I will post a sign stating: "Take Notice: Aerial Photography Under Way - Stay Clear".

Altitude, distance from the PIC, airspeed, and battery state-of-charge are data constantly viewable on the On-Screen-Display (OSD), which is equivalent to an aircraft's control panel. I maintain that the above checklist and procedures will minimize risks to property and persons on the ground as well as other aircraft in the National Airspace.

As this writing, I have practiced extensively in the DJI Phantom 2 Vision+ and DJI Inspire 1, accumulating approximately 30-35 combined hours of flight time. I continue to train on both UAVs. I have exercised all functions in both UAVs and fly only when weather conditions permit.

I have a private pilot license, #45460277, issued on September 28, 1980. I am fully aware and have extensive knowledge of VFR flight rules. I will mark the aircraft with necessary "N" number the FAA requires.

Exemption Requests:

14CFR
Part 21 Airworthiness Certification

Subpart H "prescribes the procedural requirements for issuing and changing design approval, production approval, airworthiness certificates and airworthiness approval." (Summation from Exemption No. 11138, page 11)

Response: "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,* and any associated noise certification and testing requirements of part *36,* is not necessary." (Summation from Exemption No. 11138, page 11)

Part 61 (a)(b) Parts, General Operating and Flight Rules

(a) Prescribes the requirements for issuing pilot licenses and the privileges and limitations associated with various ratings.

(b) Aeronautical experience means pilot time, flight simulator or flight training device for meeting the appropriate training and flight time requirements for an airman certificate.

Response: Organized or commercially available FAA-approved flight training has yet to be achieved by the UAV industry. While I have regularly used a flight simulator on my computer, those skills are generally not transferable to UAV operation. My sources of training are: the Flight Instruction Manuals from DJI; online videos from the manufacturer as well as videos from users; and most importantly, personal training in a secure location - an open area not subject to traffic and/or uninvolved individuals. Those training flights, which have averaged 10-15 minutes each, deal with setup, physical and electronic safety checks; lift off followed by hovering at approximately 10 feet to confirm that the GPS system is functioning properly and has registered its Home Point; a prescribed flight plan to familiarize and then master the fight controls and camera; returning to the launch point and landing. I then conduct a post-flight inspection for any problems, log the location and flight time and then view the video. There are no FAA certified instructors or FAA certified study guides available at this time as the technology continues to develop. I respectfully request an exemption from this rule.

§91.103 (b)(2)
(b)(2) This section deals the pilot's preparations for flight, in particular runway lengths, takeoff and landing distance information.

Response: Since quadcopters, like a helicopter, take off and land vertically, a DJI Phantom 2 Vision+/DJI Inspire 1 pilot would not need to know this information since there are no runways involved and the return from flight is the takeoff point. The FAA has determined that "relief is not necessary." (Summation from Exemption No. 11138, page 20)

§ 91.105

Summary: This section deals with flight crewmembers at stations.

Response: Since there are no passengers, pilots or crewmembers, I respectfully request relief from this regulation.

§ 91.109

Summary: This sections deals with flight instruction, simulated instrument flight and certain flight tests.

Response: None of these functions are applicable to a quad-copter flight and, as stated earlier, there are no FAA certified instructors or FAA certified study guides available at this time for small UAV operation. I respectfully request an exemption from this rule.

§ 91.119 (a) (b) (c)

Summary: This section deals with minimum safe altitude stating that if the power fails anywhere, an aircraft should have an altitude sufficient so that an emergency landing can occur without hazard to persons or property (91.119 a). It also sets minimum altitudes over congested areas and uncongested areas as well as has a paragraph on helicopters (91.119 b). It also sets minimum distance (500 feet) from any person, vessel, vehicle, or structure (91.119 c).

Response: None of the altitude requirements in this regulation should apply to a UAV since these aircraft are required to fly below those altitudes. Their weight, speed and GPS-controlled Return to Home feature mitigates against a catastrophic accident. A manned aircraft is much heavier and larger than a DJI Phantom 2 Vision+/DJI Inspire 1. If a Phantom 2 Vision+/DJI Inspire 1 were to malfunction or experience a hard landing, it carries no humans, no explosive fuel and since it flies primarily over a single piece of private property, any damage would likely be minimal and confined to that area. As to keeping 500' from any person, vessel, vehicle or structure, the purpose of real estate quad-copter photography is to fly close to the subject structures with the permission of the owner/representative. I maintain that my 30-35 hours flying the DJI Phantom 2 Vision+/DJI Inspire 1 have provided me with sufficient skills to manage safely any approach under 500 feet. In addition, access to the property is strictly controlled (Warning sign and the clearing of any person on the property not involved in the flight). I respectfully request an exemption from this rule.

§ 91.121

Summary: This section details altimeter settings required to maintain the "cruising altitude or flight level of that aircraft." It requires that the "elevation of the departure airport" be set in the altimeter or the "current reported altimeter setting of a station along the route and within 100 miles of the aircraft".

Response: A UAV cannot comply fully with this section's altitude requirements. The DJI Phantom 2 Vision+/DJI Inspire 1 is equipped with a barometric altimeter which automatically calculates the takeoff altitude (0 AGL) when the aircraft is warmed up - the launch point becomes the "elevation of the departure" point. The altitude of the UAV is visible in the control monitor (a smart phone or OSD) by the PIC before launch and is consistently updated as the flight progresses. I respectfully request an exemption from this rule.

§ 91.151

Summary: This section deals with fuel requirements for VFR flights stating, among other things, that "no person may begin a flight in an airplane under VFR condition unless...there is enough fuel to fly to the first point of the intended landing and, "...fly after that for at least 40 minutes (day) and 45 minutes (night)".

Response: This regulation deals with 'reserve' fuel. This could include any condition that increases flight time or fuel consumption. Weather would be one factor including wind, turbulence and the necessity to divert around threatening thunderstorms. Compliance with this regulation is not possible because the 'fuel" onboard the DJI Phantom 2 Vision+/DJI Inspire 1 is not aviation gas but a DC battery with a maximum flight duration of 17/18 minutes respectfully. Fuel management of an UAV requires constant monitoring of the battery's state-of-charge and bringing it home before it reaches the manufacturers recommended 30% level. In our training flights, we've found that a flight of 17 minutes for the DJI Phantom 2 Vision+ and 18 minutes for the DJI Inspire 1 to be safe, returning the UAV to its Home Point around the 40% level. I respectfully request an exemption from this rule.

§ **91.405**

Summary: This section deals with aircraft maintenance including regular inspection, the keeping of appropriate maintenance records and replacement of inoperable instruments

Response: Maintenance on the DJI Phantom 2 Vision+/DJI Inspire 1 is straight forward. If, in landing, a rotor blade or two are damaged, they are immediately replaced. The traditional instrument cluster in an aircraft is replaced by a data stream from the DJI Phantom 2 Vision+/DJI Inspire 1, visible in the control monitor (smart phone or OSD). Replacement of minor parts are performed by the PIC and a major 'overhaul' that can't be easily resolved will go back to the manufacturer for repair. Currently, there are no required inspections by 'authorized' maintenance personnel and there would be no space/ room on board to install a placard of inoperability. I respectfully request an exemption from this rule.

§ **91.407**

Summary/Response: This section addresses requirements after maintenance has been performed. Again, approval of the maintenance before flight is essentially in the hands of the PIC. Whatever maintenance is performed will be entered in the aircraft log, unless a separate maintenance log is required. Paragraph (b) refers to the prohibition of a pilot carrying passengers or crewmembers, if the flight characteristics have been substantially affected, before a rated pilot performs an operational check of the maintenance. Again, this is a PIC's responsibility to preflight the DJI Phantom 2 Vision+/DJI Inspire 1 and determine its flyability. And, as mentioned earlier, there is no pilot, crewmembers, or passengers on board the DJI Phantom 2 Vision+/DJI Inspire 1. I respectfully request an exemption from this rule.

§ **91.409**

Inspections: This section deals with the necessity of annual and 100-hour inspections or "progressive inspections" and approval by authorized persons which will lead to the "issuance of an airworthiness certificate."

Response: As stated earlier, there is no FAA approved inspection protocols nor authorized inspection personnel. The PIC handles those issues each time the Phantom 2 Vision+/DJI Inspire 1 is prepared for flight.

The pre-flight check list enumerated earlier will be followed to determine its mechanical and electronic integrity. I respectfully request an exemption from this rule.

§ **91.417**

Maintenance Records: This section requires a maintenance record be kept on repair, replacement and condition of vital parts (rotors, engines & airframe). Certain records must be retained for one year while other record must be kept with the aircraft even when sold to another part.

Response: The details of this section would be impractical with a DJI Phantom 2 Vision +/DJI Inspire 1, but repair issues can be entered into the aircraft log. I respectfully request an exemption from this rule.

The above requests for exemptions follow the guidance published by the FAA.

Safety:

The DJI Phantom 2 Vision+/DJI Inspire 1 are UAVs with multiple safety features to assure a safe and efficient flight, minimizing personal injury and property damage and integrating with minimal risk into the NAS. They include:

- A GPS flight system that allows for stable remote control of the aircraft.
- The ability to hover in place by simply taking hands off the controls.
- A Return to Home function if electronic contact between the Remote Control and the aircraft is lost. If the aircraft begins to show unstable flight, I will land it immediately.
- The ability to limit height (<400') and distance (<1000') from the PIC through the control software.
- Use of the 'radar' mode which instantly allows the PIC to pinpoint the UAV.
- The No Fly Zone control software will prevent takeoffs within a five-mile radius of a major airport as well as provide warning in the event that the aircraft inadvertently approaches the zone while in flight. This warning will provide sufficient power to bring the UAV home.
- The weight, size, speed and limited flight which focuses on inanimate objects (homes_ reduces the likelihood of significant personal or property damage. Flight of the UAV risks no on board lives, as in helicopter or plane photography. The safety features associated with the DJI Phantom 2 Vision+ and DJI Inspire 1 as well as my pre-flight checklist and procedures will assure that public safety is not adversely affected.

Airports and Prohibited Area:

My proposed area most likely will include the ATA's of three Connecticut airports: BDR, HVN, and GON. As an active pilot, I had a very good relationship with staff at BDR as it was my home field. I have no reason to think I would not be able to establish a very good relationship with all ATC personnel. I will comply with all FAA regulations regarding operations in and around restricted NO-FLY zones.

Community Benefit:

First and foremost is the level of safety offered by the use of a small UAV in comparison to a manned fixed wing or rotorcraft. Both weighing less than seven pounds with camera and battery, the DJI Phantom 2 Vision+ and DJI Inspire 1 are incapable of causing the level of damage or injury caused by a full-size, manned aircraft. Additionally, the ecologic and noise impact is negligible as compared to traditional manned aircraft.

Lastly, as real estate is a large part of our community, the use of a small UAV aerial filming platform is a cost-effective and visually impactful means to promote our available properties, therefore becoming an economic driver in the community.

Attachments:

- Copy of Pilot License
- DJI Phantom 2 Vision+ User Manual
- DJI Phantom 2 Vision+ Battery Safety Guidelines
- DJI Inspire 1 User Manual
- DJI Inspire 1 Safety Guidelines
- DJI Inspire 1 Battery Safety Guidelines
- DJI Inspire 1 Maintenance Manual