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

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

September 15, 2015

Exemption No. 12854
Regulatory Docket No. FAA−2015−2665

Ms. Elizabeth S. Walker
Vertical Real Estate Consulting, Inc.
7436 South Ivy Way
Centennial, CO 80112

Dear Ms. Walker:

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 5, 2015, you petitioned the Federal Aviation Administration (FAA) on behalf of Vertical Real Estate Consulting, Inc. (hereinafter petitioner or operator) for an exemption. The petitioner requested to operate an unmanned aircraft system (UAS) to conduct commercial activities for the purposes of property due diligence, marketing and aerial inspection and imagery.

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 Inspire 1 and DJI Phantom 2 Vision+.

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

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

The Basis for Our Decision

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

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

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

Our Decision

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

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

Conditions and Limitations

In this grant of exemption, Vertical Real Estate Consulting, Inc. 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 Inspire 1 and DJI Phantom 2 Vision+ when weighing less than 55 pounds including payload. Proposed operations of any other aircraft will require a new petition or a petition to amend this exemption.

2. Operations for the purpose of closed-set motion picture and television filming are not permitted.

3. The UA may not be operated at a speed exceeding 87 knots (100 miles per hour). The exemption holder may use either groundspeed or calibrated airspeed to determine compliance with the 87 knot speed restriction. In no case will the UA be operated at airspeeds greater than the maximum UA operating airspeed recommended by the aircraft manufacturer.

4. The UA must be operated at an altitude of no more than 400 feet above ground level (AGL). Altitude must be reported in feet AGL.

5. The UA must be operated within visual line of sight (VLOS) of the PIC at all times. This requires the PIC to be able to use human vision unaided by any device other than corrective lenses, as specified on the PIC's FAA-issued airman medical certificate or U.S. driver's license.

6. All operations must utilize a visual observer (VO). The UA must be operated within the visual line of sight (VLOS) of the PIC and VO at all times. The VO may be used to satisfy the VLOS requirement as long as the PIC always maintains VLOS capability. The VO and PIC must be able to communicate verbally at all times; electronic messaging or texting is not permitted during flight operations. The PIC must be designated before the flight and cannot transfer his or her designation for the duration of the flight. The PIC must ensure that the VO can perform the duties required of the VO.

7. This exemption and all documents needed to operate the UAS and conduct its operations in accordance with the conditions and limitations stated in this grant of exemption, are hereinafter referred to as the operating documents. The operating documents must be accessible during UAS operations and made available to the Administrator upon request. If a discrepancy exists between the conditions and

limitations in this exemption and the procedures outlined in the operating documents, the conditions and limitations herein take precedence and must be followed. Otherwise, the operator must follow the procedures as outlined in its operating documents. The operator may update or revise its operating documents. It is the operator's responsibility to track such revisions and present updated and revised documents to the Administrator or any law enforcement official upon request. The operator must also present updated and revised documents if it petitions for extension or amendment to this grant of exemption. If the operator determines that any update or revision would affect the basis upon which the FAA granted this exemption, then the operator must petition for an amendment to its grant of exemption. The FAA's UAS Integration Office (AFS−80) may be contacted if questions arise regarding updates or revisions to the operating documents.

8. Any UAS that has undergone maintenance or alterations that affect the UAS operation or flight characteristics, e.g., replacement of a flight critical component, must undergo a functional test flight prior to conducting further operations under this exemption. Functional test flights may only be conducted by a PIC with a VO and must remain at least 500 feet from other people. The functional test flight must be conducted in such a manner so as to not pose an undue hazard to persons and property.

9. The operator is responsible for maintaining and inspecting the UAS to ensure that it is in a condition for safe operation.

10. Prior to each flight, the PIC must conduct a pre-flight inspection and determine the UAS is in a condition for safe flight. The pre-flight inspection must account for all potential discrepancies, e.g., inoperable components, items, or equipment. If the inspection reveals a condition that affects the safe operation of the UAS, the aircraft is prohibited from operating until the necessary maintenance has been performed and the UAS is found to be in a condition for safe flight.

11. The operator must follow the UAS manufacturer's maintenance, overhaul, replacement, inspection, and life limit requirements for the aircraft and aircraft components.

12. Each UAS operated under this exemption must comply with all manufacturer safety bulletins.

13. Under this grant of exemption, a PIC must hold either an airline transport, commercial, private, recreational, or sport pilot certificate. The PIC must also hold a current FAA airman medical certificate or a valid U.S. driver's license issued by a state, the District of Columbia, Puerto Rico, a territory, a possession, or the Federal government. The PIC must also meet the flight review requirements specified in 14 CFR § 61.56 in an aircraft in which the PIC is rated on his or her pilot certificate.

14. The operator may not permit any PIC to operate unless the PIC demonstrates the ability to safely operate the UAS in a manner consistent with how the UAS will be operated under this exemption, including evasive and emergency maneuvers and maintaining appropriate distances from persons, vessels, vehicles and structures. PIC qualification flight hours and currency must be logged in a manner consistent with 14 CFR § 61.51(b). Flights for the purposes of training the operator's PICs and VOs (training, proficiency, and experience-building) and determining the PIC's ability to safely operate the UAS in a manner consistent with how the UAS will be operated under this exemption are permitted under the terms of this exemption. However, training operations may only be conducted during dedicated training sessions. During training, proficiency, and experience-building flights, all persons not essential for flight operations are considered nonparticipants, and the PIC must operate the UA with appropriate distance from nonparticipants in accordance with 14 CFR § 91.119.

15. UAS operations may not be conducted during night, as defined in 14 CFR § 1.1. All operations must be conducted under visual meteorological conditions (VMC). Flights under special visual flight rules (SVFR) are not authorized.

16. The UA may not operate within 5 nautical miles of an airport reference point (ARP) as denoted in the current FAA Airport/Facility Directory (AFD) or for airports not denoted with an ARP, the center of the airport symbol as denoted on the current FAA-published aeronautical chart, unless a letter of agreement with that airport's management is obtained or otherwise permitted by a COA issued to the exemption holder. The letter of agreement with the airport management must be made available to the Administrator or any law enforcement official upon request.

17. The UA may not be operated less than 500 feet below or less than 2,000 feet horizontally from a cloud or when visibility is less than 3 statute miles from the PIC.

18. If the UAS loses communications or loses its GPS signal, the UA must return to a pre-determined location within the private or controlled-access property.

19. The PIC must abort the flight in the event of unpredicted obstacles or emergencies.

20. The PIC is prohibited from beginning a flight unless (considering wind and forecast weather conditions) there is enough available power for the UA to conduct the intended operation and to operate after that for at least five minutes or with the reserve power recommended by the manufacturer if greater.

21. Air Traffic Organization (ATO) Certificate of Waiver or Authorization (COA). All operations shall be conducted in accordance with an ATO-issued COA. The exemption holder may apply for a new or amended COA if it intends to conduct operations that cannot be conducted under the terms of the attached COA.

22. All aircraft operated in accordance with this exemption must be identified by serial number, registered in accordance with 14 CFR part 47, and have identification (N−Number) markings in accordance with 14 CFR part 45, Subpart C. Markings must be as large as practicable.

23. Documents used by the operator to ensure the safe operation and flight of the UAS and any documents required under 14 CFR §§ 91.9 and 91.203 must be available to the PIC at the Ground Control Station of the UAS any time the aircraft is operating. These documents must be made available to the Administrator or any law enforcement official upon request.

24. The UA must remain clear and give way to all manned aviation operations and activities at all times.

25. The UAS may not be operated by the PIC from any moving device or vehicle.

26. All Flight operations must be conducted at least 500 feet from all nonparticipating persons, vessels, vehicles, and structures unless:
    a. Barriers or structures are present that sufficiently protect nonparticipating persons from the UA and/or debris in the event of an accident. The operator must ensure that nonparticipating persons remain under such protection. If a situation arises where nonparticipating persons leave such protection and are within 500 feet of the UA, flight operations must cease immediately in a manner ensuring the safety of nonparticipating persons; and
    b. The owner/controller of any vessels, vehicles or structures has granted permission for operating closer to those objects and the PIC has made a safety assessment of the risk of operating closer to those objects and determined that it does not present an undue hazard.

    The PIC, VO, operator trainees or essential persons are not considered nonparticipating persons under this exemption.

27. All operations shall be conducted over private or controlled-access property with permission from the property owner/controller or authorized representative. Permission from property owner/controller or authorized representative will be obtained for each flight to be conducted.

28. Any incident, accident, or flight operation that transgresses the lateral or vertical boundaries of the operational area as defined by the applicable COA must be reported to the FAA's UAS Integration Office (AFS−80) within 24 hours. Accidents must be reported to the National Transportation Safety Board (NTSB) per instructions contained on the NTSB Web site: www.ntsb.gov.

If this exemption permits operations for the purpose of closed-set motion picture and television filming and production, the following additional conditions and limitations apply.

29. The operator must have a motion picture and television operations manual (MPTOM) as documented in this grant of exemption.

30. At least 3 days before aerial filming, the operator of the UAS affected by this exemption must submit a written Plan of Activities to the local Flight Standards District Office (FSDO) with jurisdiction over the area of proposed filming. The 3-day notification may be waived with the concurrence of the FSDO. The plan of activities must include at least the following:
    a. Dates and times for all flights;
    b. Name and phone number of the operator for the UAS aerial filming conducted under this grant of exemption;
    c. Name and phone number of the person responsible for the on-scene operation of the UAS;
    d. Make, model, and serial or N−Number of UAS to be used;
    e. Name and certificate number of UAS PICs involved in the aerial filming;
    f. A statement that the operator has obtained permission from property owners and/or local officials to conduct the filming production event; the list of those who gave permission must be made available to the inspector upon request;
    g. Signature of exemption holder or representative; and
    h. A description of the flight activity, including maps or diagrams of any area, city, town, county, and/or state over which filming will be conducted and the altitudes essential to accomplish the operation.

31. Flight operations may be conducted closer than 500 feet from participating persons consenting to be involved and necessary for the filming production, as specified in the exemption holder's MPTOM.

Unless otherwise specified in this grant of exemption, the UAS, the UAS PIC, and the UAS operations must comply with all applicable parts of 14 CFR including, but not limited to, parts 45, 47, 61, and 91.

This exemption terminates on September 30, 2017, unless sooner superseded or rescinded.

Sincerely,

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

Enclosures

United States of America
Department of Transportation
Federal Aviation Administration
Washington, DC

Regulatory Docket No: TBD

In the Matter of the Petition For Exemption of
Vertical Real Estate Consulting, Inc.

For an Exemption seeking Relief from Title 14 of the Code of Federal Regulations, sections:
21 Subpart H, 45.23(b), 61.113 (a) & (b), 91.7(a), 91.9(b), 91.103(b)(2), 91.105, 91.119, 91.121, 91.151(a), 91.203(a) & (b), 91.405, 91.407, 91.409, 91.417 (a) & (b), pursuant to Section 333 of the FAA Modernization and Reform Act OF 2012.

June 5, 2015

Elizabeth S. Walker
Vertical Real Estate Consulting, Inc.
7436 S. Ivy Way
Centennial, CO 80112
Tel: 303-264-7455

Introduction

Pursuant to Section 333 of the Federal Aviation Administration Modernization and Reform Act of 2012, (Reform Act), and 14 C.F.R. §11.61(b), Vertical Real Estate Consulting, Inc., hereby petitions for exemption from 14 C.F.R §§ 21 Subpart H, 45.23(b), 61.113 (a) & (b), 91.7(a), 91.9(b), 91.103(b)(2),91.105, 91.119, 91.121, 91.151(a), 91.203(a) & (b), 91.405, 91.407, 91.409, 91.417 (a) & (b), of the Federal Aviation Regulations (FARs).

Vertical Real Estate Consulting, Inc. (hereinafter "Vertical") is a real estate consulting company. It is a woman-owned business, pursuant to the Women's Business Enterprise Council. Vertical seeks an exemption for a commercial Certificate of Authorization to use unmanned aircraft to support commercial activities for the purposes of property due diligence, marketing and aerial inspection and imagery.

The proposed unmanned aircraft, The Inspire I and Phantom 2 Vision +, manufactured by DJI of China, consist of a lightweight (approximately 6.5 pounds) battery-operated aircraft, a PC-based ground control station and associated communications equipment. The aircraft carries a camera that allows one to conduct aerial photography, both still photos and short videos, of the subject properties. By providing high quality, aerial imagery, Vertical's clients will be able to obtain due diligence and critical information regarding their property without the expense of using conventional aircraft or the safety concerns of hiring people to climb or conduct photography from a high and potentially dangerous vantage point. Vertical equipment will be operated by at least one licensed pilot.

This petition is submitted as a request to allow Vertical to commercially operate both the DJI Inspire I and DJI Phantom 2 Vision+ unmanned aircraft system (UAS), in accordance with their respective Aircraft Operational Handbook, and those conditions that may be established by the FAA as required by Section 333. Included with this application are the following:

Exhibit A Inspire I Aircraft Operations Handbook (aka User Manual)
Exhibit B Phantom 2 Vision+ Aircraft Operations Handbook (aka User Manual)
Exhibit C Vertical Real Estate Consulting, Inc. Flight Operations Checklist

Both the Inspire I and the DJI Phantom 2 Vision+ are small unmanned aircraft systems (UAS) that are light weight (no more than approximately 6.5 pounds fully loaded with a camera), multi-rotor vehicles, with vertical takeoff and landing capabilities. They operate at a speed of no more than 100 mph and have the capability to hover and move in a vertical and horizontal plane simultaneously. In brief, the requested exemptions would permit the operation of UAS that are less than 55 lbs:

1) by an FAA licensed pilot;

2) at less than 400 feet of altitude above ground level (AGL);

3) in an area that is limited and predetermined;

4) where public access to such area is controlled;

5) where operational intentions are communicated to the local FSDO when required;

6) in accordance with any other rules set forth by the FAA.

As will be addressed herein, approval of the requested exemptions would create no safety concerns regarding the National Airspace System and will fulfill the Secretary of Transportation's (the FAA Administrator's) responsibilities to establish requirements for the safe operation of such aircraft systems in the national airspace system.

Name and address of the Petitioner

Pursuant to 14 C.F.R. §11.81(a) the name and address of the applicant is:

Elizabeth S. Walker
Vertical Real Estate Consulting, Inc.
7436 S. Ivy Way
Centennial, CO 80112
Tel: 303-264-7455
Email: liz@verticalrec.com

Specific Provisions from which Exemption is Sought

14 C.F.R. Part 21 Subpart H: Airworthiness Certificates

Subpart H, entitled Airworthiness Certificates, establishes the procedural requirements for the issuance of airworthiness certificates as required by FAR § 91.203 (a)(1).

Request for Exemption

Vertical requests exemption from the requirements for an airworthiness certificate, pursuant to 49 U.S. Code §44701(f) and Section 333 of the Reform Act. While the UASs here are manufactured without an airworthiness certificate and there are no mechanics to certify these aircraft, an equivalent level of flight safety is attained by special pilot training, ground based security procedures, redundant safety procedures as well as safety features programmed into the UAS to guard against lost or degraded communications, lost satellite reception, or geomagnetic interference.

The UASs to be operated, specifically the Inspire I and Phantom 2 Vision +, manufactured by DJI, weigh approximately six and one half (6.5) lbs., including battery and camera, fly at low speeds in a controlled environment, fly at altitudes of less than four-hundred (400) feet above ground level (AGL), have a total flight time of no more than twenty-five (25) minutes, and are controlled by a licensed pilot that will maintain visual line of sight (VLOS) of the UASs. Further, the UAS carry neither pilot nor passengers, carry no flammable liquid or explosive materials, and will be operated over private property only with the express permission of the landowner, and will not be operated within four nautical miles of an airport. It will be operated over public property only with the necessary permits from state and local governments, prior to operation.

The aircraft will be operated in the field with both a pilot in command (PIC) and a ground based visual observer (VO), in compliance with FAA Policy N 8900.227 Section 14.

The Federal Aviation Act §49 U.S.C. §44701 (f) and Section 333 authorize the FAA to exempt aircraft, upon consideration of the size, weight, speed, operational capability, and proximity to airports and populated areas. Application of that criteria to the proposed UASs operations and procedures demonstrate that the Inspire I and Phantom 2 Vision + can be operated in a manner that is safer than conventional aircraft with airworthiness certificates. Additionally, there is no threat to National Airspace System (NAS) or national security as the aircraft cannot be operated within four (4) miles of any airport, and in the event Vertical is requested to do conduct services within (4) miles of an airport, notice will be given to the local Flight Service District Office (FSDO) prior flight operations as mandated by the FAA.

14 C.F.R. §45.23(b) Aircraft Markings

> **(a)** Each operator of an aircraft must display on that aircraft marks consisting of the Roman capital letter "N" (denoting United States registration) followed by the registration number of the aircraft. Each suffix letter used in the marks displayed must also be a Roman capital letter.
>
> **(b)** When marks include only the Roman capital letter "N" and the registration number is displayed on limited, restricted or light-sport category aircraft or experimental or provisionally certificated aircraft, the operator must also display on that aircraft near each entrance to the cabin, cockpit, or pilot station, in letters not less than 2 inches nor more than 6 inches high, the words "limited," "restricted," "light-sport," "experimental," or "provisional," as applicable.

Request for Exemption

An exemption is requested, or in the alternative, a finding that §45.23(b) does not apply as the Inspire I and Phantom 2 Vision + have no cabin, nor entrance to the cabin, and no cockpit or pilot station where markings could be placed. Should the FAA mandate that the UASs be marked with registration numbers, Vertical will comply with this mandate and mark the UASs with the applicable registration number in characters or letters as large as practicable.

14 C.F.R. §61.113 Private pilot privileges and limitations: Pilot in command

> **(a)** Except as provided in paragraphs (b) through (h) of this section, no person who holds a private pilot certificate may act as pilot in command of an aircraft that is carrying passengers or property for compensation or hire; nor may that person, for compensation or hire, act as pilot in command of an aircraft.
>
> **(b)** A private pilot may, for compensation or hire, act as pilot in command of an aircraft in connection with any business or employment if:
>
> **(1)** The flight is only incidental to that business or employment; and
>
> **(2)** The aircraft does not carry passengers or property for compensation or hire.

Request for Exemption

Vertical requests an exemption from the limitations of §61.113 as an equivalent level of safety can be achieved as the Pilot in Command (PIC) operating the UASs will possess at least a private pilot certificate. The PIC will 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. Here, the risk to the public is mitigated because the small size of the UASs (6.5 pounds) prevents carrying pilot or passengers or any cargo other than a camera. As the PIC, Visual Observer (VO) and crew will always remain on the ground, the level of safety is thereby greater than what can be achieved in traditional aircraft.

14 C.F.R. §91.7(a) Civil Aircraft Airworthiness

(a) No person may operate a civil aircraft unless it is in an airworthy condition.

(b) The pilot in command of a civil aircraft is responsible for determining whether that aircraft is in condition for safe flight. The pilot in command shall discontinue the flight when unairworthy mechanical, electrical, or structural conditions occur.

Request for Exemption

Vertical seeks exemption to the extent this rule requires an airworthiness certificate as no such certificates exist for UASs. An equivalent level of safety will be achieved as the PIC of the UASs will ensure the airworthiness of the UASs through use of the Aircraft Operations Handbooks for maintenance and use of the Vertical Flight Operations Checklist, Exhibit C, prior to each flight.

14 C.F.R. §91.9 (b)(2) Civil Aircraft Flight Manual in the Aircraft

(a) Except as provided in paragraph (d) of this section, no person may operate a civil aircraft without complying with the operating limitations specified in the approved Airplane or Rotor craft Flight Manual, markings, and placards, or as otherwise prescribed by the certificating authority of the country of registry.

(b) No person may operate a U.S.-registered civil aircraft—

(1) For which an Airplane or Rotor craft Flight Manual is required by §21.5 of this chapter unless there is available in the aircraft a current, approved Airplane or Rotor craft Flight Manual or the manual provided for in §121.141(b); and

(2) For which an Airplane or Rotor craft Flight Manual is not required by §21.5 of this chapter, unless there is available in the aircraft a current approved Airplane or Rotor craft Flight Manual, approved manual material, markings, and placards, or any combination there.

Request for Exemption

Vertical seeks exemption because the small size of the Inspire I and the Phantom 2 Vision + does not allow room to carry such a UASs Operations Manual on the aircraft, and this requirement would be unnecessary as there is no pilot on board. An equivalent level of safety will be maintained by keeping

the Aircraft Operations Handbook at the ground control point where the PIC will have immediate access to it.

14 C.F.R. §91.103(b) Pre-flight Action

Each pilot in command shall, before beginning a flight, become familiar with all available information concerning that flight. This information must include—

(b) For any flight, runway lengths at airports of intended use, and the following takeoff and landing distance information:

(1) For civil aircraft for which an approved Airplane or Rotor craft Flight Manual containing takeoff and landing distance data is required, the takeoff and landing distance data contained therein; and

(2) For civil aircraft other than those specified in paragraph (b)(1) of this section, other reliable information appropriate to the aircraft, relating to aircraft performance under

(3) expected values of airport elevation and runway slope, aircraft gross weight, and wind and temperature.

Request for Exemption

Vertical seeks exemption to the extent the rule requires the PIC to have runway data because the proposed UASs are Vertical Take-off and Landing (VTOL) and will not be operated within four (4) miles of any public airport. An equivalent level of safety and public benefit is achieved by the PIC taking necessary pre-flight actions as indicated in the Vertical Flight Operations Checklist, as well as the Aircraft Operations Handbook.

14 C.F.R. §91.105 Flight Crewmembers at Stations

(a) During takeoff and landing, and while en route, each required flight crewmember shall—

(1) Be at the crewmember station unless the absence is necessary to perform duties in connection with the operation of the aircraft or in connection with physiological needs; and

(2) Keep the safety belt fastened while at the crewmember station.

(b) Each required flight crewmember of a U.S.-registered civil aircraft shall, during takeoff and landing, keep his or her shoulder harness fastened while at his or her assigned duty station. This paragraph does not apply if—

(1) The seat at the crewmember's station is not equipped with a shoulder harness; or

(2) The crewmember would be unable to perform required duties with the shoulder harness fastened.

Request for Exemption

Vertical seeks exemption as the UASs have no ability to carry pilot or crew, and thereby have no seats, seat belts, or crew stations. An equivalent level of safety can be achieved by the pilot always having positive control of the remote control and maintaining VLOS with the UASs at all times. Should the pilot become physiologically unable to continue as PIC, the UASs have a "Return Home and Land" override function as well as other actions more fully described in the Aircraft Operation Handbooks.

14 C.F.R. §91.119 Minimum Safe Altitudes

> Except when necessary for takeoff or landing, no person may operate an aircraft below the following altitudes:
>
> **(a) Anywhere.** An altitude allowing, if a power unit fails, an emergency landing without undue hazard to persons or property on the surface.
>
> **(b) Over congested areas.** Over any congested area of a city, town, or settlement, or over any open air assembly of persons, an altitude of 1,000 feet above the highest obstacle within a horizontal radius of 2,000 feet of the aircraft.
>
> **(c) Over other than congested areas.** An altitude of 500 feet above the surface, except over open water or sparsely populated areas. In those cases, the aircraft may not be operated closer than 500 feet to any person, vessel, vehicle, or structure.
>
> **(d) Helicopters, powered parachutes, and weight-shift-control aircraft.** If the operation is conducted without hazard to persons or property on the surface—
>
> **(1)** A helicopter may be operated at less than the minimums prescribed in paragraph (b) or (c) of this section, provided each person operating the helicopter complies with any routes or altitudes specifically prescribed for helicopters by the FAA; and
>
> **(2)** A powered parachute or weight-shift-control aircraft may be operated at less than the minimums prescribed in paragraph (c) of this section.

Request for Exemption

Vertical seeks exemption here because flight operations will always be below four-hundred (400) feet AGL. An equivalent level of safety will be achieved through pre-flight planning, communication with the local FSDO when required, securing the flight area to prevent the public from entering, briefing all crew on emergency procedures, and ensuring operation of aircraft safety systems. Protections equivalent to minimum safe altitudes are created because, in the event of low-battery power, loss of communication or interference with communication between the remote control and the aircraft, on-board safety programs will automatically land the UAS at a predetermined safe area. Similarly, the operational environment will be controlled to restrict public access.

Normal operations will be less than 400 feet AGL and risk to the public and / or private property minimal. The Inspire I and Phantom 2 Vision + proposed here have a total rotor area of approximately three (3) feet and weigh approximately 6.5 pounds. As such, the risk to persons and property is drastically

reduced. Further, the UASs will not carry fuel, flammable material, or hazardous cargo that would pose a hazard to persons on the ground.

14 C.F.R. §91.121 Altimeter Settings

(a) Each person operating an aircraft shall maintain the cruising altitude or flight level of that aircraft, as the case may be, by reference to an altimeter that is set, when operating—

(1) Below 18,000 feet MSL, to—

(I) The current reported altimeter setting of a station along the route and within 100 nautical miles of the aircraft;

(ii) If there is no station within the area prescribed in paragraph (a)(1)(i) of this section, the current reported altimeter setting of an appropriate available station; or

(iii) In the case of an aircraft not equipped with a radio, the elevation of the departure airport or an appropriate altimeter setting available before departure; or

(2) At or above 18,000 feet MSL, to 29.92″ Hg.

(b) The lowest usable flight level is determined by the atmospheric pressure in the area of operation as shown in the following table: (*additional Tables Omitted*)

Request for Exemption

An exemption is sought as the UASs proposed are manufactured without an altimeter or two-way communications radio. An equivalent level of safety is achieved through on-board systems and GPS sensors which couple with a geomagnetic compass to act as a barometric altimeter for stability and accuracy of flight. Information about the height of the UASs above ground level is displayed to the Pilot in Command at all times.

14 C.F.R. §91.151 Fuel Requirements for Flight in VFR Conditions

(a) No person may begin a flight in an airplane under VFR conditions unless (considering wind and forecast weather conditions) there is enough fuel to fly to the first point of intended landing and, assuming normal cruising speed—

(1) During the day, to fly after that for at least 30 minutes; or

(2) At night, to fly after that for at least 45 minutes.

(b) No person may begin a flight in a rotor craft under VFR conditions unless (considering wind and forecast weather conditions) there is enough fuel to fly to the first point of intended landing and, assuming normal cruising speed, to fly after that for at least 20 minutes.

Request for Exemption

The Inspire I and Phantom 2 Vision + have a maximum flight duration of 25 minutes. An equivalent level of safety is achieved by implementation of a minimum battery life requirement rather than minimum fuel requirement. The Vertical Flight Operations checklist provides that the flight will be terminated when the battery reaches a minimum of 25%. An equivalent level of safety can be achieved as to the reserve battery power requirements proposed are comparable to the reserve fuel requirements in the existing regulation.

14 C.F.R. §91.203 Civil aircraft: Certifications required.

(a) Except as provided in Sec. 91.715, no person may operate a civil aircraft unless it has within it the following:

(1) An appropriate and current airworthiness certificate. Each U.S. airworthiness certificate used to comply with this subparagraph (except a special flight permit, a copy of the applicable operations specifications issued under Sec. 21.197(c) of this chapter, appropriate sections of the air carrier manual required by parts 121 and 135 of this chapter containing that portion of the operations specifications issued under Sec. 21.197(c), or an authorization under Sec. 91.611) must have on it the registration number assigned to the aircraft under part 47 of this chapter. However, the airworthiness certificate need not have on it an assigned special identification number before 10 days after that number is first affixed to the aircraft. A revised airworthiness certificate having on it an assigned special identification number, that has been affixed to an aircraft, may only be obtained upon application to an FAA Flight Standards district office.

(2) An effective U.S. registration certificate issued to its owner or, for operation within the United States, the second copy of the Aircraft registration Application as provided for in Sec. 47.31(c), or a registration certification issued under the laws of a foreign country.

(b) No person may operate a civil aircraft unless the airworthiness certificate required by paragraph (a) of this section or a special flight authorization issued under Sec. 91.715 is displayed at the cabin or cockpit entrance so that it is legible to passengers or crew.

(c) No person may operate an aircraft with a fuel tank installed within the passenger compartment or a baggage compartment unless the installation was accomplished pursuant to part 43 of this chapter, and a copy of FAA Form 337 authorizing that installation is on board the aircraft.

(d) No person may operate a civil airplane (domestic or foreign) into or out of an airport in the United States unless it complies with the fuel venting and exhaust emissions requirements of part 34 of this chapter.

Request for Exemption

The regulation provides that an airworthiness certificate, with the registration number assigned to the aircraft and a registration certificate must be aboard the aircraft. At approximately 6.5 pounds (Inspire) and approximately less than 3 pounds (DJI Phantom 2 Vision+), the UASs are too small to carry documentation, does not have an entrance, and is not capable of carrying passenger or crew.

14 C.F.R. §91.405 Maintenance required

Each owner or operator of an aircraft—

(a) Shall have that aircraft inspected as prescribed in sub part E of this part and shall between required inspections, except as provided in paragraph (c) of this section, have discrepancies repaired as prescribed in part 43 of this chapter;

(b) Shall ensure that maintenance personnel make appropriate entries in the aircraft maintenance records indicating the aircraft has been approved for return to service;

(c) Shall have any inoperative instrument or item of equipment, permitted to be inoperative by §91.213(d)(2) of this part, repaired, replaced, removed, or inspected at the next required inspection; and

(d) When listed discrepancies include inoperative instruments or equipment, shall ensure that a placard has been installed as required by §43.11 of this chapter.

Request for Exemption

An exemption to these regulations is needed because Part 43 and these sections apply only to aircraft with an airworthiness certificate, which the Inspire I and the Phantom 2 Vision + will not have. An equivalent level of safety will be achieved because maintenance and inspections will be performed in accordance with Exhibit A and B. The operator will ensure that the UAS is in working order prior to initiating flight, perform required maintenance, and keep a log of any maintenance performed. The operator is most familiar with the aircraft and best suited to maintain the aircraft in an airworthy condition to provide the equivalent level of safety. If mechanical issues arise, the UAS can land immediately and will be operating no higher than 400 feet AGL. Moreover, the UASs are both of a small size, carrying capacity, and the fact that flight operations will only take place in restricted areas for limited periods of time, create less risk than the same factors associated with conventional fixed-wing aircraft and rotorcraft performing the same operation.

14 C.F.R. §91.407 Operation after Maintenance, Preventive Maintenance, Rebuilding, Alteration

(a) No person may operate any aircraft that has undergone maintenance, preventive maintenance, rebuilding, or alteration unless—

(1) It has been approved for return to service by a person authorized under §43.7 of this chapter; and

(2) The maintenance record entry required by §43.9 or §43.11, as applicable, of this chapter has been made.

(b) No person may carry any person (other than crew-members) in an aircraft that has been maintained, rebuilt, or altered in a manner that may have appreciably changed its flight characteristics or substantially affected its operation in flight until an appropriately rated pilot with at least a private pilot certificate flies the aircraft, makes an operational check of the maintenance performed or alteration made, and logs the flight in the aircraft records.

(c) The aircraft does not have to be flown as required by paragraph (b) of this section if, prior to flight, ground tests, inspection, or both show conclusively that the maintenance, preventive maintenance, rebuilding, or alteration has not appreciably changed the flight characteristics or substantially affected the flight operation of the aircraft.

Request for Exemption

Vertical is seeking exemption from §91.407 as there are currently no persons authorized to service the UASs pursuant to the section above. As with the request for exemption under §91.405, an equivalent level of safety will be achieved by thorough pre-flight inspections and records of all maintenance or repairs being kept in the UAS log books. Further, Vertical will maintain the aircraft and perform post-maintenance, pre-flight inspections and ground tests to confirm that the flight characteristics of the UAS have not been substantially impacted after maintenance.

14 C.F.R. §91.409 Inspections

(a) Except as provided in paragraph (c) of this section, no person may operate an aircraft unless, within the preceding 12 calendar months, it has had—

(1) An annual inspection in accordance with part 43 of this chapter and has been approved for return to service by a person authorized by §43.7 of this chapter; or

(2) An inspection for the issuance of an airworthiness certificate in accordance with part 21 of this chapter.

No inspection performed under paragraph (b) of this section may be substituted for any inspection required by this paragraph unless it is performed by a person authorized to perform annual inspections and is entered as an "annual" inspection in the required maintenance records.

(b) Except as provided in paragraph (c) of this section, no person may operate an aircraft carrying any person (other than a crewmember) for hire, and no person may give flight instruction for hire in an aircraft which that person provides, unless within the preceding 100 hours of time in service the aircraft has received an annual or 100-hour inspection and been approved for return to service in accordance with part 43 of this chapter or has received an inspection for the issuance of an airworthiness certificate in accordance with part 21 of this chapter. The 100-hour limitation may be exceeded by not more than 10 hours while en route to reach a place where the inspection can be done. The excess time used to reach a place where the inspection can be done must be included in computing the next 100 hours of time in service.

(c) Paragraphs (a) and (b) of this section do not apply to—

(1) An aircraft that carries a special flight permit, a current experimental certificate, or alight-sport or provisional airworthiness certificate;

(2) An aircraft inspected in accordance with an approved aircraft inspection program under part 125 or 135 of this chapter and so identified by the registration number in the operations specifications of the certificate holder having the approved inspection program;

Request for Exemption

Vertical seeks exemption from §91.409 for reasons similar to those articulated in the requests for exemption from §91.407 and §91.405 above. There are currently no persons authorized to service or inspect the UAS pursuant to the section above, but an equivalent level of safety will be achieved by Vertical making thorough pre-flight inspections and keeping detailed records of all maintenance or repairs. As above, post-maintenance pre-flight inspections and ground tests will be conducted to confirm that the flight characteristics of the UAS have not been substantially impacted.

14 C.F.R. §91.417 Maintenance records

(a) Except for work performed in accordance with §§91.411 and 91.413, each registered owner or operator shall keep the following records for the periods specified in paragraph (b) of this section:

(1) Records of the maintenance, preventive maintenance, and alteration and records of the 100-hour, annual, progressive, and other required or approved inspections, as appropriate, for each aircraft (including the airframe) and each engine, propeller, rotor, and appliance of an aircraft. The records must include—

(i) A description (or reference to data acceptable to the Administrator) of the work performed; and

(ii) The date of completion of the work performed; and

(iii) The signature, and certificate number of the person approving the aircraft for return to service.

(2) Records containing the following information:

(i) The total time in service of the airframe, each engine, each propeller, and each rotor.

(ii) The current status of life-limited parts of each airframe, engine, propeller, rotor, and appliance.

(iii) The time since last overhaul of all items installed on the aircraft which are required to be overhauled on a specified time basis.

(iv) The current inspection status of the aircraft, including the time since the last inspection required by the inspection program under which the aircraft and its appliances are maintained.(v) The current status of applicable airworthiness directives (AD) and safety directives including, for each, the method of compliance, the AD or safety directive number

and revision date. If the AD or safety directive involves recurring action, the time and date when the next action is required.

(vi) Copies of the forms prescribed by §43.9(d) of this chapter for each major alteration to the airframe and currently installed engines, rotors, propellers, and appliances.

(b) The owner or operator shall retain the following records for the periods prescribed:

(1) The records specified in paragraph (a)(1) of this section shall be retained until the work is repeated or superseded by other work or for 1 year after the work is performed.

(2) The records specified in paragraph (a)(2) of this section shall be retained and transferred with the aircraft at the time the aircraft is sold.

(3) A list of defects furnished to a registered owner or operator under §43.11 of this chapter shall be retained until the defects are repaired and the aircraft is approved for return to service.

(c) The owner or operator shall make all maintenance records required to be kept by this section available for inspection by the Administrator or any authorized representative of the National Transportation Safety Board (NTSB). In addition, the owner or operator shall present Form 337 described in paragraph (d) of this section for inspection upon request of any law enforcement officer.

(d) When a fuel tank is installed within the passenger compartment or a baggage compartment pursuant to part 43 of this chapter, a copy of FAA Form 337 shall be kept on board the modified aircraft by the owner or operator.

Request for Exemption

Vertical is seeking exemption from §91.417 to the extent the rule requires a certified person to perform work under §91.417(a)(1)(iii), compliance with Airworthiness Directives under sub-section (a)(1)(v), and/or copies of alteration forms under (a)(1)(vi). An equivalent level of safety will be achieved by Vertical keeping maintenance logs and documentation in the Aircraft Operational Handbook for both of the UASs indicated in this application.

Why Granting the Exemptions Would be in the Public Interest

Generally, aviation activity is in the public interest when it is regulated, predictable and has a material positive impact on society. The exemptions requested herein would allow for aerial photography and videography pursuant to existing FAA regulations. The rules, procedures and processes contained therein create a safe and highly predictable process by which aerial cinematography may take place. Granting the requested exemptions will give the public access to the process of aerial photography and videography and the products which are the result of those endeavors.

A UAS can inspect, photograph, and collect data on hard to get to areas that otherwise require worker inspection. The use of the UAS will reduce workplace injuries and/or fatalities associated with falls. Moreover, the UAS can replace the use of helicopters and small aircraft to monitor similar sites, reducing the cost, emissions and associated dangers of using conventional aircraft.

Why Granting the Exemptions Would Provide an Equivalent Level of Safety to Current Rules

Granting the requested exemptions would provide a level of safety equivalent to that provided in current rules, and in some cases greater, due the specificity with which the Aircraft Operational Handbooks identify unique aspects of UASs, and lay out methods of operation which emphasize safety of the public, protection of private property, yet allows operation of UAS. The risk of 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. In addition to the lack of crew members, the UAS, because of the small size and weight has less potential for collateral damage to life and property on the ground and in the air, compared to manned aircraft, which carry fuel and have a significantly larger wingspan.

A Summary That Can Be Published In *The Federal Register*

The Rules from Which Vertical Real Estate Consulting, Inc. Seeks Exemption:

Vertical Real Estate Consulting, Inc. seeks exemption from the following: 14 C.F.R. §§21 Subpart H, 45.23(b), 61.113 (a) & (b), 91.7(a), 91.9(b), 91.103(b)(2), 91.105, 91.119, 91.121, 91.151(a), 91.203(a) & (b), 91.405, 91.407, 91.409, 91.417 (a) & (b).

A Brief Description Of The Exemptions Vertical Real Estate Consulting, Inc. Seeks:

The proposed exemptions will allow Vertical Real Estate Consulting, Inc., to operate small Unmanned Aircraft Systems (UAS) for aerial imagery in controlled locations to provide clients with visual information for marketing and/or due diligence regarding subject properties.

Privacy

All flights will occur over private or controlled access property with the property owner's prior consent and knowledge. Any incidental images taken of persons will be of individuals who have given consent or otherwise have agreed to be in the area where the aerial photography will take place.

Sincerely,

Elizabeth S. Walker

Elizabeth S. Walker
Vertical Real Estate Consulting, Inc.