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

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

July 27, 2015

Exemption No. 12165
Regulatory Docket No. FAA–2015–1685

Mr. Nigel Smith
Vertical Vision
1602 Victor II Boulevard, Unit 3
Morgan City, LA 70380

Dear Mr. Smith:

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 April 28, 2015, you petitioned the Federal Aviation Administration (FAA) on behalf of Vertical Vision (hereinafter petitioner or operator) for an exemption. The petitioner requested to operate an unmanned aircraft system (UAS) to conduct aerial photography, videography, 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 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 Vision 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 Vision is hereafter referred to as the operator.

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

1. Operations authorized by this grant of exemption are limited to the DJI Phantom 2 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 July 31, 2017, unless sooner superseded or rescinded.

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

Enclosures

April 28, 2015

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

Re: Exemption Request Pursuant to Section 333 of the FAA Reform Act and Part 11 of the Federal Aviation Regulations from 14 CFR 45.23(b); 14 CFR Part 21; CFR 61.113 (a) & (b); 91.7 (a); 91.9 (b) (2); 91.103 (b); 91.109.119; 91.121; 91.151 (a); 91.203 (a) & (b); 91.405 (a); 91.407

EXEMPTIONS (Regulations from which the exemption is requested)

- **14 CFR Part 21, Subpart H**
  - Airworthiness Certificates
- **14 CFR 45.23 (b)**, ,
  - Aircraft Marking
  - Certification and Registration
- **14 CFR 61.113 (a) & (b)**
  - Pilot in Command
- **14 CFR 91.7 (a)**
  - Civil aircraft airworthiness
- **14 CFR 91.9 (b) (2)**
  - Document/Flight Manuals
- **14 CFR 91.103 (b)**
  - Preflight action
- **14 CFR 109**
  - Flight instruction
- **14 CFR 91.113**
  - Right-of-way rules
- **14 CFR 91.119**
  - Minimum safe altitude
- **14 CFR 91.121**
  - Altimeter setting
- **14 CFR 91.131 (a) (1) (c) (2) (d) (1)**
  - Operations in Class B airspace

- **14 CFR 91.145 (b)**
  - Management of aircraft operations in the vicinity of aerial demonstrations and major sporting events.
- **14 CFR 91.151**
  - Fuel requirements for VFR flight
- **14 CFR 91.203 (a) & (b)**
  - Civil Aircraft: Certifications required
- **14 CFR 91.405 (a); 407 (a) (1); 409 (a); 417 (a) & (b)**
  - Maintenance and maintenance inspections
- **14 CFR 407**
  - Operation after Maintenance, preventive maintenance, rebuilding and inspections
- **14 CFR 409**
  - Inspections
- **14 CFR 417**
  - Maintenance records
- **NOTAM 9/5151**
  - Flying Around Sporting Events

Dear Sir or Madam:

Pursuant to Section 333 of the FAA Modernization and Reform Act of 2012 and 14 C.F.R., Vertical Vision, an operator of an Unmanned Aircraft System (UAS), hereby applies for an exemption from the Federal Aviation Regulations to allow commercial operation of its UAS for the purpose of aerial imaging/videography of structures as well as observation and inspection of utility equipment in a controlled, safe environment.

14 C.F.R. PART 21, SUBPART H: Airworthiness Certificates:

14 C.F.R. §91.203 (A) (1) Subpart H, entitled Airworthiness Certificates, establishes the procedural requirements for the issuance of airworthiness certificates as required by FAR §91.203 (a) (1). Given the size and limited operating area

associated with the aircraft to be utilized by Vertical Vision, an exemption from Part 21 Subpart H meets the requirements of an equivalent level of safety under Part 11 and Section 333 of the Reform Act. The Federal Aviation Act (49 U.S.C.§44701 (f)) and Section 333 of the Reform Act both authorize the FAA to exempt aircraft from the requirement for an airworthiness certificate, upon consideration of the size, weight, speed, operational capability, and proximity to airports and populated areas of the particular UA. In all cases, an analysis of these criteria demonstrates that the UA operated without an airworthiness certificate, in the restricted environment and under the conditions proposed will be at least as safe, or safer, than a conventional aircraft (fixed wing or rotorcraft) operating with an airworthiness certificate without the restrictions and conditions proposed. The UAs to be operated hereunder is less than five (5) pounds (2.26 Kg) fully loaded, carries neither a pilot nor passenger, carries no explosive materials or flammable liquid fuels, and operates exclusively within a secured area as set out in Vertical Vision's Standard Protocols and Controls. Unlike other civil aircraft, operations under this exemption will be tightly controlled and monitored by both the operator, pursuant to Vertical Vision's Confidential Protocols and Controls, and under the requirements and in compliance with local public safety requirements, to provide security for the area of operation as is now done with conventional aerial videography and photography. Lastly, application of these same criteria demonstrates that there is no credible threat to national security posed by the UAs, due to its size, speed of operation, location of operation, lack of explosive materials or flammable liquid fuels, and inability to carry a substantial external load.

14 C.F.R. § 45.23 (B): Marking of the Aircraft:

The regulation requires: 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. Even though the UAs will have no airworthiness

certificate, an exemption may be needed as the UAs will have no entrance to the cabin, cockpit or pilot station on which the words "limited," "restricted," "light-sport," "experimental," or "provisional," may be placed. Given the size of the UAs, two-inch lettering will be impossible. The word “experimental,” or any other term as is so required, will be placed on the fuselage of the UAs in compliance with §45.29 (f). The equivalent level of safety will be provided by having the UAs marked on its fuselage as required by §45.29 (f) where the pilot, observer and others working with the UAs will see the identification of the UAs as “Experimental.” The FAA has issued the following exemptions to this regulation to Exemptions Nos. 10700, 8738, 10167 and 10167A.

CFR 61.113 (a) & (b) Private Pilot Privileges and Limitations: Pilot in Command:
CFR 61.113 (a) & (b) states:

> (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. To reach an equivalent level of safety, the self-imposed experience and training requirements would more than offset any risk introduced by using private pilots to fly an unmanned aircraft in very restricted and controlled areas.

14 C.P.R. §91.7(a): Civil aircraft airworthiness:
The regulation requires that no person may operate a civil aircraft unless it is in airworthy condition. As there will be no airworthiness certificate issued for the aircraft, should this exemption be granted, no FAA regulatory standard will exist

for determining airworthiness. Given the size of the aircraft and the requirements contained in the manual for maintenance and use of safety check lists prior to each flight, a subset of which are provided in enclosed supplemental material, an equivalent level of safety will be provided.

CFR 91.9 (b) (2) Civil Aircraft Flight Manual in the Aircraft:

CFR 91.9 (b) (2) states: No person may operate a U.S.-registered civil aircraft—
For which an Airplane or Rotorcraft Flight Manual is not required by § 21.5 of this chapter, unless there is available in the aircraft a current approved Airplane or Rotorcraft Flight Manual, approved manual material, markings, and placards, or any combination thereof.

Given the size of the sUAS being utilized in this endeavor, there is no room onboard for an aircraft flight manual.

The equivalent level of safety will be achieved by keeping the flight manual with the pilot/team on the ground with easy access. Previous precedence is resident in Exemptions 8607, 8737, f8738, 9299, 9299A, 9565, 9565B, 10167, 10167A, 10602, f32827, and 10700.

CFR 91.103 (b) Preflight Action:

CFR 91.103 (b) states:

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 Rotorcraft 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 expected values of airport elevation and runway slope, aircraft gross weight, and wind and temperature.

This regulation dictates that a pilot conduct preflight activities. Without an FAA approved flight manual, relief is required from this regulation. Extensive pre-flight

planning will provide an equivalent level of safety by using the operations plan, aircraft flight manual, maintenance manual and available weather and NOTAM information.

CFR 91.109 Flight instruction:

CFR 91.109 states:

No person may operate a civil aircraft (except a manned free balloon) that is being used for flight instruction unless that aircraft has fully functioning dual controls.

sUASs clearly have no onboard flight controls. An equivalent level of safety will be accomplished by conducting pilot training via the control system that communicates with the aircraft from the ground. Vertical Vision intends to conduct this training on private grounds under controlled conditions.

CFR 91.113 Right-of-way rules: Except water operations:

CFR 91.113 deals with the many scenarios whereby different types of aircraft in different states must give way to other aircraft.

Because the sUAS PIC does not have "see and avoid" capability, the petitioner requests relief from this regulation. All operations will be within LOS of the pilot and well below any airspace where other flight activity is taking place.

14 C.F.R. §91.119: Minimum safe altitudes:

§91.119 establishes safe altitudes for operation of civil aircraft. §91.119 (d) allows helicopters to be operated at less than the minimums prescribed, provided the person operating the helicopter complies with any route or altitudes prescribed for helicopters by the FAA. As this exemption is for a UAS that closely mimics the behavior of a helicopter and the exemption requests authority to operate at altitudes up to 400 AGL, an exemption may be needed to allow such operations. As set forth herein, the UAV will never operate at higher than 400 AGL or beyond unaided visual line of sight, whichever is closer. It will however be operated in a restricted area with officials tasked with ensuring public safety, and where buildings and people will not be exposed to operations without their pre-obtained consent and training.

The equivalent level of safety will be achieved given the size, weight, speed of the UAS as well as the location where it is operated. No flight operation will be taken without the permission of the controlling agency or right of way owner in the case of private property or local officials in the case of public property or private property with public interests. Because of the advance notice to the property owner and participants in the remote sensing activity, all affected individuals will be aware of the planned flight operations. Compared to flight operations with aircraft or rotorcraft weighting far more than the maximum 8.2kg the heaviest UAS proposed herein and the lack of flammable fuel, any risk associated with these operations is far less than those presently presented with conventional aircraft operating at or below 500 AGL. In addition, the low-altitude operations of the UAS will ensure separation between these small-UAV operations and the operations of conventional aircraft that must comply with §91.119.

14 C.F.R. §91. 121 Altimeter Settings:

§91.121 requires each person operating an aircraft to maintain cruising altitude by reference to an altimeter that is set "...to the elevation of the departure airport or an appropriate altimeter setting available before departure." As the UAS may not have a barometric altimeter, but instead a GPS altitude read out, an exemption may be needed. An equivalent level of safety will be achieved by the operator, confirming the altitude of the launch site shown on the GPS altitude indicator before flight. The PIC and Technician will also ensure effective pairing with multiple GPS sources to guarantee accurate detection of height.

14 C.F.R. §9 1.15l (a): Fuel Requirements for Flight in VFR Conditions:

§91.151 (a) prohibits an individual from beginning "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:' The battery powering the UAS provides approximately 25 minutes of powered flight in hover mode with payload. Vertical Vision's UAS will not be able to meet the 30 minute reserve requirement in 14 CPR §91.151. Vertical Vision believes that an equivalent level of

safety can be achieved by limiting flights to 30 minutes or 25% of battery power whichever happens first. This restriction would be more than adequate to return the UAS to its planned landing zone from anywhere within its limited operating area.

14 C.P.R. §91.405 (a); 407 (a) (1); 409 (a) (2); 417(a) & (b): Maintenance Inspections:

These regulations require that an aircraft operator or owner "shall have that aircraft inspected as prescribed in subpart 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...;' and others shall inspect or maintain the aircraft in compliance with Part 43. Given that these section and Part 43 apply only to aircraft with an airworthiness certificate, these sections will not apply to the applicant. Maintenance will be accomplished by the operator pursuant to the flight manual. An equivalent level of safety will be achieved because these small UAV are very limited in size and will carry a small payload and operate only in restricted areas for limited periods of time. If mechanical issues arise the UAS can land immediately and will be operating from no higher than 400 feet AGL. 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. Moreover, the operator is the person most familiar with the aircraft and best suited to maintain the aircraft in an airworthy condition to provide the equivalent level of safety.

Vertical Vision is in possession of a DJI Phantom Vision 2 Plus.
The UAS operated by Vertical Vision weighs less than 5 pounds, including the payload (i.e. camera, lens, and gimbal). It has a maximum speed of 34MPH, can hover and can simultaneously move vertically and horizontally. Vertical Vision will only operate its UAS in line of sight (LOS) only and will operate only with permission of the municipality in which it is being operated. Operations of the UAS will be utilized for purpose of obtaining precision photographs or digital video for use in commercial land and property surveying and inspections. The flat, open terrain would not necessitate the altitude of the UAS to go above 100 feet.

Such operations will insure that the UAS will "not create a hazard to users of the national airspace system or the public."

The Aircraft and its operation:

DJI-Phantom 2 Vision Plus

- This UAS has flight control using a remote control operating the 5.728-5.85Ghz frequency in compliance with FCC regulations. The range extender operates within a frequency of 2412-2462MHz in accordance with FCC regulations.
- At any time that communication is lost the UAS will return to its take off location at a height of approximately 60 feet.
- The UAS locks onto multiple GPS satellites to establish a "home" position prior to flight.
- All flights will be operated within line of sight (LOS) by the pilot and observer.
- Maximum flight time of each event will be limited to 15 minutes or less, this will leave approximately 50% of reserve time on the UAS.
- Flights will be well below the 400 feet AGL requirement; Vertical Vision will never operate a UAS above 100 feet AGL.
- Flights will always have a UAS operator and a camera operator who will control the recording via the DJI application on smart phone or tablet.
- UAS operation will not be commenced if within 5 miles of an airport which will ensure no danger to manned aircraft traffic.
- Preflight procedure will be as follows:
  - Power supply test of UAS, Controller, Range Extender and DJI application device (smartphone/tablet)
  - Calibration of compass
  - Weather considerations
  - Flight obstructions
  - GPS lock of no less than 6 satellites
  - Link between controller and UAS

- Link between application and UAS

- All maintenance will be conducted in accordance with all manufacturer's specifications
- All maintenance and repair/modifications will be logged in a permanent file for future reference.
- All of the latest firmware will be updated as needed via the DJI software as well as controller calibrations.

As with any photographic/surveying equipment used properly and safely, the use of the UAS would benefit the public greatly. The collection and gathering of photo and video media, that would otherwise require manned aerial platforms, can now be performed safely and efficiently. With 10 years in photography experience and over 15 years experience with radio controlled aircraft, the use of this new equipment would be a great addition to existing equipment and my opinion could revolutionize my industry. In addition I, Nigel Smith, personally will be the only operator of the UAS mentioned above. If granted an exemption, I will keep it on file with the city hall in Morgan City, LA.

If you have any further questions please feel free to contact the undersigned at 985-360-9858 or email to verticalvisioninc@gmail.com.

Thank you for your consideration.

Nigel Smith

Nigel Smith
Owner/Operator
Vertical Vision
985-360-9858
verticalvisioninc@gmail.com