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

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

May 13, 2015

Exemption No. 11570
Regulatory Docket No. FAA–2015–0347

Mr. Charles R. O'Neal, Jr.
President
National UAS Solutions, LLC
104 Raphael Drive
Lafayette, LA 70508

Dear Mr. O'Neal:

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 February 5, 2015, you petitioned the Federal Aviation Administration (FAA) on behalf of National UAS Solutions, LLC (hereinafter petitioner or operator) for an exemption. The petitioner requested to operate an unmanned aircraft system (UAS) to conduct commercial training of sUAS pilots and videography and photography of real estate property.

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, National UAS Solutions, LLC 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)

[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.

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, National UAS Solutions, LLC 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 May 31, 2017, unless sooner superseded or rescinded.

Sincerely,

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

Enclosures

February 5, 2015

U.S. Department of Transportation
Docket Operations
West Building Ground Floor, Room W12-140
1200 New Jersey Avenue, SE
Washington, DC 20590

Electronically Submitted
via www.regulations.gov

Regarding:

Exemption Request Pursuant to Section 333 of the FAA Reform Act of 2012 and Part 11 of the Federal Aviation Regulations from 14 CFR Part 21; 61.113(a) and (b); 91.103; 91.109(c); 91.119(c); 91.121; 91.151(a)(1); 91.405(a); 91.407(a)(1); 91.409(a)(1) and (2); 91.417(a) and (b).

Dear Sir or Madam:

Pursuant to Section 333 of the FAA Modernization Reform Act of 2012 (Reform Act) and 14 CFR Part 11, **National UAS Solutions, LLC** which is an owner and operator of Small Unmanned Aerial Systems (sUAS) equipped to conduct commercial training of sUAS pilots in the vital interest of safety and videography and photography of real estate property for the purpose of constructing virtual tours, hereby petitions to be exempt from current Federal Aviation Administration (FAA) regulations that affect manned aircraft but is not applicable to unmanned aircraft. **National UAS Solutions, LLC** feels this exemption should be granted as long as such operations are conducted within the scope and conditions outlined herein or as may be established by the FAA as required by Section 333.

The Reform Act gives the Secretary of Transportation the authority to determine if certain sUAS may operate safely in the national airspace system (NAS) before completion of the FAA's plan and rulemaking to integrate sUAS into the NAS. The Reform Act directs the Secretary to consider which types of sUAS as a result of their size, weight, speed, operational capability, proximity to airports and populated areas, and operation with visual line of sight do not create a hazard to users of the NAS or a threat to national security.

The founder of **National UAS Solutions, LLC** is Charles Ray O'Neal, Jr. Mr. O'Neal is a commercial jet pilot that has made his living flying corporate aircraft for over forty years. He holds a FAA issued Airline Transport Pilot's license along with a Certified Flight Instructor Airplane, Multi-engine Land Instructor and Instrument Instructor ratings and has accumalated over 12,600 hours of pilot in command time. Recognizing the need for sUAS pilots to possess the same knowledge of the NAS as FAA licensed airplane pilots, **National UAS Solutions, LLC** and founder Charles Ray O'Neal, Jr. agree with the FAA that training must take place in the interest of public safety for this integration to take place.

The granting of this exemption request will provide immediate benefit to both the aircraft pilot training industry and real estate industry by authorizing highly controlled sUAS operations within Class G airspace, at or below 400 feet above ground level (AGL), in visual line of sight

(VLOS) of an FAA Certified Private Pilot holding at least a Class 3 medical certificate during daylight hours and above controlled privately owned and operated property. Recognizing the pilot shortage today and the decreasing amount of student pilot startups in recent years, **National UAS Solutions, LLC** believes this is one way the public could benefit by motivating them to start their new adventure into the exciting world of aviation.

National UAS Solutions, LLC will operate sUAS that will weigh less than 55 pounds including the payload. They will operate at no more than 50 knots and have the capability to hover and move vertically and horizontally at the same time. Operations would be conducted above privately owned and operated properties, with the consent of the owner/operator. All **National UAS Solutions, LLC** operations will be performed by highly trained professional FAA licensed pilots thereby insuring that the sUAS will ***"not create a hazard to users of the national airspace system or the public."***

The granting of this exemption request is in the public interest, does not create a hazard to users of the NAS or the public, or pose a threat to national security.

In the following pages **National UAS Solutions, LLC** will address all areas of concern to include the exceptions requested and equivalent levels of safety.

The name and address of the applicant is:

National UAS Solutions, LLC
Attention: Charles R. O'Neal, Jr.
Phone: (337) 288-1793
Email: coneal1976@hotmail.com
Address: 104 Raphael Drive
Lafayette, Louisiana 70508

National UAS Solutions, LLC appreciates your consideration in this matter.

Best regards,

Charles R. O'Neal, Jr.
President
National UAS Solutions, LLC

To follow this exemption letter and/or upon request:

- **National UAS Solutions, LLC** Operating Manual
- **National UAS Solutions, LLC** Aircraft Inspection Program
- **National UAS Solutions, LLC** Training Syllabus
- **National UAS Solutions, LLC** Civil COA
- Aircraft Manufacturer's User's Guides

Professional sUAS Flight Training Serves the Public Interest

1. sUAS integration into the NAS without proper flight training is inherently dangerous.

2. sUAS pilot flight training and experience can only be obtained as a "hobbyist". There is no professional mechanism where FAA pilots can receive sUAS aircraft flight training and compensation within the United States of America under current rules and regulations.

3. Providing an avenue of professional flight training for sUAS pilots in a controlled environment, by professional FAA Certified Flight Instructors is crucial to the safe integration of sUAS into the NAS.

4. Training in rural areas, within Class G airspace, at or below 400 feet AGL, away from any non-participating personnel provides for an increased level of safety and is therefore in the public interest.

Real Estate Videography/Photography by sUAS serves the Public Interest

1. Aerial videography for geographical awareness and for real estate marketing has been around for a long time through manned fixed wing aircraft and helicopters. For small budget real estate companies and average homeowners the expense of such aerial videography is cost prohibitive.

2. Only large companies or high-end realtors or luxury homeowners can afford to absorb the expense of manned aircraft videography. This deprives small budget real estate companies and the average homeowner of a very valuable marketing tool.

3. Manned aircraft pose a threat to the public through potential catastrophic loss or crash of a large aircraft. Loaded with explosive hydrocarbon based fuel, a much larger risk is imposed on the general public than a small, less than 55 pounds, sUAS that is powered by a small battery.

4. **National UAS Solutions, LLC** will eliminate the above problems by offering the use of a small, ultra-light weight sUAS that is powered by a no emission battery and is very inexpensive to operate and own as compared to a large manned aircraft. This serves the public interest by making such operations safer and much more affordable.

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NATIONAL UAS SOLUTIONS, LLC

1. **National UAS Solutions LLC** is led by Charles R. O'Neal, Jr. who is a lifelong corporate pilot that started his training in 1970 at the age of 15. He had his first corporate flying job in 1974 flying a seaplane for an oil company along the Louisiana Gulf Coast. He started flying remote control (RC) model aircraft in 1987.

2. **National UAS Solutions, LLC** team's expertise consist of two Airline Transport Pilots, a Certified Flight Instructor-AIM, a Mechanical Engineer and three Real Estate consultants. The pilots have more than 50 years of aviation management experience.

3. **National UAS Solutions, LLC** has extensive knowledge and experience in Commercial Aviation, Flight Instruction and RC model aircraft.

NATIONAL UAS SOLUTIONS, LLC Experience

As professional pilots, **National UAS Solutions, LLC** understands and agrees with the FAA that safety is paramount and will **ALWAYS** hold **SAFETY** ahead of any commercial endeavor.

1. Individuals within **National UAS Solutions, LLC** have only operated sUAS as hobbyists. To date, **National UAS Solutions, LLC** members have not engaged in any commercial activity to ensure it is in compliance with any applicable FARs, local, state and federal laws.

2. **National UAS Solutions, LLC** has a detailed sUAS Operating Manual which includes an Aircraft Inspection Program and Training Syllabus that it shall follow, should this exemption be approved.

NATIONAL UAS SOLUTIONS, LLC sUAS Description

National UAS Solutions, LLC intends to use and operate DJI Phantom 2 Vision+ sUAS multirotor aircraft for the purpose of sUAS Flight Training and aerial real estate videography and photography.

These aircraft have fail safe features that include, but are not limited to, geo fencing and lost link return to home capability. In addition, there are low voltage warning lights on the aircraft, and a low voltage warning and telemetry visual and audio warnings. There are low voltage warnings on the Wi-Fi range extender on screen and both visual and audio warning of low voltage on the remote control itself.

National UAS Solutions' sUAS SPECIFICATIONS:

Model:	Phantom 2 Vision+
Weight (Battery Included):	1242g; 43.8 ounces; 2.7 pounds

Hovering Accuracy Vertical:	0.5 m	1.6 feet
Hovering Accuracy Horizontal:	2.5 m	8.2 feet
Max Angular Velocity – Yaw:	200 degrees/second	
Max Tilt Angle:	35 degrees	
Max Ascent Speed:	6 m/s	19.7 feet/sec
Max Descent Speed:	2 m/s	6.7 feet/sec
Max Speed:	22 m/s	49.2 feet/sec
Max Flight Time:	25 minutes	
Operating Temperature Range:	-10 to +40 degrees C	
Dimensions:	350mm X 350mm	14 X 14 inches

Aircraft and an Equivalent Level of Safety

National UAS Solutions, LLC proposes that the exemption requested applies to civil aircraft that have the characteristics and that operate with the limitations listed herein.
These limitations provide for at least an equivalent or higher level of safety to operations under the current regulatory structure because the proposed operations represent a safety enhancement to the already safe operations conducted with conventional aircraft.

This exemption Request is for Use of sUAS subject to Extensive Operational and Safety Requirements.

These limitations and conditions to which **National UAS Solutions, LLC** agrees to be bound when conducting commercial operations under a FAA issued exemption at a minimum include:

Safety

A. The sUAS Pilot in Command (PIC) shall possess at a minimum a private pilot license and current third-class medical certificate.

   i) The PIC shall also meet the flight review requirements specified in 14 CFR 61.56 in an aircraft in which the PIC is rated on their pilot certificate.

   ii) The PIC shall be trained in the operation of the specific make and model of the sUAS being piloted and successfully completed all training required.

   iii) The PIC shall have accumulated and logged, in a manner consistent with 14 CFR 61.51 (b), a minimum of five hours as sUAS pilot operating the make and model of sUAS to be utilized for operations under the exemption. Three take-offs and three landings in the preceding 90 days must be accomplished to maintain currency.

   iv) The PIC shall have accumulated and logged, in a manner consistent with 14 CFR 61.51 (b), a minimum of 200 flight cycles and 25 hours of total time as a sUAS rotorcraft pilot and at least five hours logged as a sUAS pilot with a similar sUAS (multi rotor or

helicopter). Prior documented flight experience that was obtained in compliance with applicable regulations may satisfy this requirement.

v) Training, proficiency, and experience-building flights can also be conducted under this grant of exemption to accomplish the required flight cycles and flight time.

1. During training, proficiency and experience-building flights, all persons not essential for flight operations are considered non-participants, and the PIC must operate the sUAS with appropriate distance from non-participants in accordance with 14 CFR 91.119.

B. The sUAS Safety Observer (SO) shall meet all training requirements and be responsible for all of his/her duties as set forth by **National UAS Solutions, LLC** sUAS Operating Manual.

C. The PIC and SO will be designated before each flight.

D. The minimum crew for each flight operation will consist of the sUAS PIC and SO.

E. The PIC and the SO shall always be within visual line of sight (VLOS) of each other and in direct verbal communications at all times.

F. Safety Briefings shall be conducted before each day's activities to include, but not limited to:

i) Designated roles of the PIC and SO.

ii) Risk Management and Mitigation.

sUAS Specifications and Design:

A. All sUAS flown under this exemption shall be less than 55 pounds including aircraft and payload. This exemption requests permission only with respect to the specific use of the DJI Phantom 2 Vision+ sUAS which weigh less than 10 pounds including payload.

B. The radio frequency spectrum used for operation and control of the sUAS shall comply with the Federal Communications Commission (FCC) or other appropriate government oversight agency requirements.

C. Maximum speed shall be less than 50 knots.

D. The sUAS shall be equipped with Inertial Navigation Sensor (s) and Gyroscopes (IRS/IRU/Accelerometer/MEMS Gyroscopes).

E. The sUAS shall be equipped with a Compass (Magnetometer/Heading Source).

F. The sUAS shall be equipped with a Global Positioning System (GPS) guidance system.

G. The sUAS shall be designed, should it lose communications or lose its GPS signal, to return to a pre-determined location within the Operations Area and land or be recovered in accordance with **National UAS Solutions, LLC**'s sUAS Operating Manual.

sUAS Maintenance

A. sUAS shall be maintained in accordance with the manufacturer's recommendations and **National UAS Solutions, LLC** sUAS Operating Manual and Inspection Program.

B. **National UAS Solutions, LLC** will document and maintain a record of the sUAS maintenance, preventative maintenance, alterations, and status of replacement, overhaul component parts, and the total time in service of the sUAS. These records will be maintained at the principle base of operations for the life of the aircraft or as required by Federal Aviation Regulations
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C. **National UAS Solutions, LLC** shall comply with all manufacturer Safety/Service Bulletins or equivalent pertaining to the sUAS aircraft.

D. The PIC shall perform a preflight inspection of the sUAS, controller and ground station prior to each flight to ensure it is operational with no discrepancies. If the preflight inspection reveals discrepancies, repairs or maintenance shall be performed prior to flight. The sUAS will only be operated if all systems are operating per manufacture's specifications and in a discrepancies free condition.

E. Maintenance or repairs that may affect the sUAS operation or flight characteristics shall undergo a functional test flight when required in accordance with manufacture's recommendations and **National UAS Solutions, LLC** sUAS Operating Manual. This functional test flight shall be recorded in the sUAS's records. If the functional test flight is completed successfully, the sUAS can return to service by the PIC.

F. **National UAS Solutions, LLC** shall follow the manufacturer's sUAS maintenance, overhaul, replacement, inspection, and life limit requirements. When not provided by the manufacturer aircraft maintenance, component, overhaul, replacement, and inspection maintenance requirements shall be established and included in **National UAS Solutions, LLC** sUAS Operating Manual and Inspection Program.

G. All sUAS shall 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, except with respect to the size of the markings. Markings shall be as large as practical.

Permissions and Permitting

A. All required permissions and permits shall be obtained from territorial, state, county or city jurisdictions, including local law enforcement or other appropriate governmental agencies.

B. At least three days before a scheduled operational flight, **National UAS Solutions, LLC** shall submit a written plan of activities to the local flight standards district office (FSDO) with jurisdiction over the area of the proposed flight. The 3 day notification may be waived with the concurrence of the FSDO.

i) The plan of activities shall include at least the following:

1. Dates and times for all requested flights.
2. Name and phone number of **National UAS Solutions, LLC** sUAS Flight Operations.
3. Name, certificate and phone number of PIC responsible.
4. Make, model and N-Number of sUAS to be used
5. Statement from **National UAS Solutions, LLC** that it will be operating on approved privately owned and operated property; the list of those who gave permission shall be made available to the inspector upon request.
6. Description of flight activity, including maps or diagrams of any area over which flights will be conducted, the relationship of that area to any nearby city, town, etc., and the altitudes essential to accomplish the operation.
7. Signature of the exemption-holder or representative

C. Documents required under 14 CFR 91.9 and 91.203 shall be readily available to the PIC anytime the aircraft is in operation. These documents shall be made available to the Administrator or any law enforcement official upon request.

D. **National UAS Solutions, LLC** shall obtain an Air Traffic Organization (ATO) issued Certificate of Waiver or Authorization (COA) prior to conducting any operations under this grant of exemption.

E. **National UAS Solutions, LLC** shall also request a Notice to Airman (NOTAM) not more than 72 hours in advance, but not less than 48 hours prior to the operation.

F. **National UAS Solutions, LLC** shall obtain the consent of all persons involved in the operation and ensure that only consenting persons be allowed within 500 feet of the Operations Area.

Operations

A. The sUAS shall not operate within 5 nautical miles of the geographic center of any airport as denoted on the current FAA published aeronautical chart unless a letter of agreement with that airport's management is obtained, and the operation is conducted in accordance with a NOTAM as required by the operator's COA. This letter of agreement with the airport management shall be made available to the Administrator upon request.

B. The sUAS will only operate within the lateral boundaries of approved privately owned and operated property. An Operations Area within those boundaries will be established for each flight. These areas will be free of unnecessary hazards or risks and non-participating personnel.

   i) The sUAS shall only operate within a pre-defined Operations Area that shall be thoroughly inspected by the PIC for buildings, overhangs, obstacles, wires, poles, people, vehicles, sun angle, shadows, glare, reflective surfaces, clouds, smoke, and terrain among other potential hazards.

C. Flights shall be conducted during day visual meteorological conditions (VMC) only.

   i) In addition, the sUAS shall not be operated less than 500 feet below or less than 2,000 feet horizontally from a cloud or when the visibility is less 3 statute miles from the PIC.

   ii). SUAS operations shall not be conducted during night, as defined in 14 CFR 1.1.

   iii) Flights shall not be conducted under special visual flight rules (SVFR).

D. Flights shall be operated at an altitude at or below 400 feet AGL, as indicated by the procedures specified in **National UAS Solutions, LLC**'s sUAS Operating Manual.

E. The PIC shall be prohibited from operating the sUAS from any moving device or vehicle.

F. The sUAS shall be operated within VLOS of the PIC.

   i) The PIC shall maintain VLOS without the aid of telescopes, cameras or other devices.

   ii) The PIC shall maintain VLOS with their own vision, which includes the use of eyeglasses or corrective lenses as specified on the PIC's medical certificate.

G. The sUAS shall remain clear and yield the right of way to manned operations and activities at all times including, but not limited to, ultralight vehicles, parachute activities, parasailing activities, hang gliders, etc.

H. **National UAS Solutions, LLC** will require the PIC and the SO to have successfully completed a qualifications process which will include ground and flight training, as outlined in the **National UAS Solutions, LLC** sUAS Operating Manual.

I. The PIC's primary responsibility while in flight is the safe operation of the sUAS
.

J. The PIC and the SO may not switch roles during the flight.

SUAS Flight Time and Flight Durations

A. DJI Phantom 2 Vision + operations shall be completed within 25 minutes flight time or with 25% power remaining whichever occurs first.

B. If the flight time exceeds 25% of battery life an aural warning shall sound signifying that the aircraft must be landed immediately.

Regulations for Which Exemptions are Requested

14 CFR 21 – Requirements to Secure Airworthiness Certificates

A. Certificate exemptions should be given because size, weight, and operation areas of the sUAS meet the level of safety necessary for exemption under Section 333 of the Reform Act
.

B. The FAA has the authority to exempt aircraft from airworthiness certificate requirements under the Act (49 U.S.C. 44701 (f)) and Section 333 of the Reform Act.

C. This serves the public interest for all the reasons previously stated on pages 2 and 3 of this petition.

14 CFR 61.113 (a) and (b) – 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.

A. Due to the fact that there are no standards for private or commercial sUAS operations, **National UAS Solutions, LLC** requests to utilize at least Private Pilots with a current third class medical in support of its own operations.

B. Knowledge of flight characteristics and the Federal Aviation Regulations (FARs), along with the ability to physically manipulate the controls of the sUAS are the critical aspects of the requested operation. **National UAS Solutions, LLC** feels this can be accomplished by a Private Pilot that has specific training on the sUAS aircraft and operates in accordance with the **National UAS Solutions, LLC** sUAS Operating Manual, Federal Aviation Regulations, local, state and federal laws and regulations.

C. The risks associated with the operation of a sUAS are so diminished from the level of risk associated with commercial aviation operations contemplated by Part 61 when drafted, that allowing operations of the sUAS as requested with a Private Pilot as the PIC exceeds the present level of safety achieved by 14 CFR 61.113 (a) and (b).

D. The FAA has the authority to waive pilot requirements for commercial operations under 49 USC 44701 (f).

E. Equivalent or better safety levels will be achieved as there will be no human beings on board the sUAS aircraft.

F. This serves the public interest and contributes to the greater good for all the reasons previously stated on pages 2 and 3 of this petition.

14 CFR 91.103 Preflight Actions
Each pilot in command shall, before beginning a flight become familiar with all available information concerning that flight. This information must include—

(a) For a flight under IFR or a flight not in the vicinity of an airport, weather reports and forecasts, fuel requirements, alternatives available if the planned flight cannot be completed, and any known traffic delays of which the pilot in command has been advised by ATC;

(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.

A. **National UAS Solutions, LLC** respectfully requests exemption from this regulation as it does not apply to its area of operation in the fact that the sUAS utilized will never be

operated on an IFR flight plan or closer than 5 miles from the geographical center of an airport.

B. Equivalent levels of safety will be met through preparation and compliance according to **National UAS Solutions, LLC** sUAS Operating Manual, including but not limited to weather reports, forecasts, wind speed and direction, temperature, battery requirements and battery charge levels, cycles remaining on the battery and any other information deemed relevant to aircraft performance and safety shall be considered.

C. The PIC shall perform a prefight inspection in accordance with the manufacturer's recommendations and the **National UAS Solutions, LLC** sUAS Operating Manual of the aircraft, controller, ground station and associated equipment prior to each flight to ensure it is free of all discrepancies.

D. Granting this exemption from this particular FAR will serve the public interest and greater good for all the reasons previously stated on pages 2 and 3 of this petition.

14 CFR 91.119 – Minimum Safe Altitudes: General
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 1000 feet above the highest obstacle within a horizontal radius of 2000 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.

A. **National UAS Solutions, LLC** respectfully requests exemption from this FAR as the sUAS that will be used in day to day operations will never be flown over 400 feet in altitude so this FAR cannot apply.

B. **National UAS Solutions, LLC** shall obtain the consent of all persons involved in the operation and ensure that only consenting persons be allowed within 150 feet of the Operations Area. Foldable signs with the words "Caution! Unmanned Aerial Vehicle in Operation! Stay back 150 feet!" will be placed at the perimeter of the Operations Area to warn people of an ongoing operation. See Exemption 11138 already granted to Mr. Douglass Trudeau of Tierra Antigua Real Estate.

C. The sUAS will only operate within the lateral boundaries of approved privately owned and operated property. An Operations Area within those boundaries will be established for

each flight. These areas will be free of unnecessary hazards or risks and non-participating personnel.

D. Given the size, weight, construction material, speed and operation of the sUAS, **National UAS Solutions, LLC** believes that an equivalent or higher level of safety, as mandated by 14 CFR 91.119, will be achieved.

E. Granting exemption from this FAR will be in the public interest for all of the reasons previously stated on pages 2 and 3 of this petition.

14 CFR 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.

A. **National UAS Solutions, LLC**'s sUAS will not have a barometric altimeter, however, the use of triangulation with a minimum of 6 satellites in use by its onboard GPS will be able to give accurate Height Above Ground Level.(HAGL) measurements.

B. **National UAS Solutions, LLC** believes that an equivalent level of safety can be achieved by the operator as the sUAS uses HAGL from its initialization/takeoff point.

C. **National UAS Solutions, LLC** believes granting an exemption from this FAR is in the public interest and serves the greater good for all the reasons previously stated on pages 2 and 3 of this petition.

14 CFR 91.151 (a) (1) – 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.

A. The FAA has previously issued exemptions for fuel requirements in VFR conditions for sUAS aircraft. See exemptions 2689F, 5745, 10673, 10808 and 11138.

B. **National UAS Solutions, LLC** believes an equivalent or higher level of safety can be obtained by terminating the flight prior to the following:

Aircraft Battery (Fuel) Requirements

DJI Phantom 2 Vision+ -- 25 minutes or 25% of battery life, whichever occurs first. This will allow for 6.2 minutes reserve.

1. The DJI Phantom 2 Vision + sUAS has a second level of safety that is achieved through the use of an aircraft battery monitoring system. The aircraft system will alert the operator of low battery voltage and initiate a return to its take off location before battery capacity is depleted.

2. **National UAS Solutions, LLC** will not operate sUAS at night in accordance with 14 CFR 1.1.

3. An equivalent level of safety will be achieved because these sUAS are limited in size, scope of operations, and shall only fly above approved privately owned and operated property at or below 400 feet HAGL, and does not bear the same risks associated with large manned aircraft and therefore should be exempt from this section's requirements.

C. An exemption granted from the provisions of this FAR serves the public interest and the common good for all the reasons previously stated on pages 2 and 3 of this petition.

14 CFR 91.405 (a) – Maintenance Required.
Each owner or operator of an aircraft-

(a) 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.

A. This section and Part 43 apply only to aircraft with an airworthiness certificate, therefore these sections will not apply.

B. In the absence of regulatory provisions dealing with sUAS operation for maintenance required, **National UAS Solutions, LLC** will establish the sUAS Operating Manual, Inspection Program and Manufacturers Maintenance Recommendations for maintenance required.

1. Maintenance will be accomplished by **National UAS Solutions, LLC** in accordance with manufacturer's recommendations and **National UAS Solutions, LLC**'s sUAS Operating Manual and Inspection Program.

2. Maintenance, preventive maintenance, rebuilding and alteration will be successfully accomplished by trained personnel or factory authorized maintenance facilities.

3. Functional test flights will be performed by the PIC when required. The sUAS shall only be returned to service when this functional test flight is successfully completed. If a

mechanical issue arises the sUAS can land safely or be recovered within the Operations Area. An appropriate log entry shall be made in the sUAS's Aircraft Flight Log that the aircraft has successfully completed a functional test flight and is authorized for return to service.

4. The **National UAS Solutions, LLC** sUAS Operating Manual details how to enter in the maintenance log scheduled and unscheduled maintenance or functional test flights that are performed.

5. **National UAS Solutions, LLC** shall only operate its sUAS with all systems functioning per manufactures specification in a discrepancy free condition.

6. These records will be maintained at the principle base for operation for the life of the aircraft or as required by Federal Aviation Regulations.

C. **National UAS Solutions, LLC** and the Aircraft Manufacturer (DJI) are the most familiar with the aircraft and best suited to maintain the aircraft in an airworthy condition. These maintenance procedures allow for an equivalent level of safety to be achieved due to the limited size of the aircraft, the scope and area of operations.

D. The granting of this exemption from this FAR serves the public interest and contributes to the common good for all the reasons previously stated on page 2 and 3 of this petition.

14 CFR 91.409 (a) (1) and (2) – 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.

A. This section and Part 43 apply only to aircraft with an airworthiness certificate therefore these sections will not apply.

B. In the absence of regulatory provisions dealing with sUAS inspections, **National UAS Solutions, LLC** has developed requirements to address this topic. Instructions found in the aUAS Operating Manual, Inspection Program and the Manufactures User Guide will be used in lieu of non-existent(as of the date of this petition) Federal Aviation Administration regulatory guidelines.

1. Maintenance will be accomplished by **National UAS Solutions, LLC** pursuant to the manufacturer's recommendations and **National UAS Solutions, LLC**'s sUAS Operating Manual and Inspection Program.

2. Maintenance, preventive maintenance, rebuilding and alteration will be successfully accomplished by trained personnel or factory authorized dealers.

3. The **National UAS Solutions LLC** sUAS Operating Manual details how to enter into the maintenance log all inspections that are performed.

4. A functional test flight will be performed by the PIC when required after inspections. The sUAS shall be returned to service when the flight is successfully completed. If a mechanical issue arises the sUAS can land safely or be recovered within the Operations Area. An appropriate log entry shall be entered in the Aircraft Flight Log that the functional flight test was completed and the aircraft returned to service.

5. **National UAS Solutions, LLC** shall only operate its sUAS with all systems functioning per manufacturer's specifications in a discrepancy free condition.

6. These records will be maintained at the principle base of operation for the life of the aircraft or as required by the Federal Aviation Regulations.

C. **National UAS Solutions, LLC** and the Aircraft Manufacturer (DJI) are the most familiar with the aircraft and best suited to maintain the aircraft in an airworthy condition. These maintenance inspections allow for an equivalent level of safety to be achieved due to the aircraft's limited size, scope and area of operations.
D. The granting of this exemption for this FAR is in the public interest and serves the greater good for all the reasons previously stated on page 2 and 3 of this petition.

14 CFR 91.417 (a) and (b) – 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 involve 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.

A. This section and Part 43 apply only to aircraft with an airworthiness certificate; therefore these sections will not apply.

B. In the absence of regulatory provisions dealing with sUAS maintenance records, **National UAS Solutions, LLC** has developed requirements to address this topic.

Instructions found in the aUAS Operating Manual, Inspection Program and the Manufactures User Guide will be used in lieu of non-existent(as of the date of this petition) Federal Aviation Administration regulatory guidelines.

1. Maintenance will be accomplished by **National UAS Solutions, LLC** pursuant to the manufacturer's recommendations and **National UAS Solutions, LLC**'s sUAS Operating Manual.

2. Maintenance, preventive maintenance, rebuilding and alteration maintenance record keeping will be performed by trained personnel and entered in the respective aircraft maintenance log at the completion of each event. The **National UAS Solutions, LLC** sUAS Operating Manual details how entries are to be made in the aircraft maintenance log for scheduled and unscheduled maintenance of functional test flights that are performed.

3. These records will be maintained at the principle base for operation for the life of the aircraft or as required by Federal Aviation Regulations.

C. **National UAS Solutions, LLC** and the Aircraft Manufacturer (DJI) are the most familiar with the aircraft and best suited to maintain the aircraft in an airworthy condition. These maintenance records allow for an equivalent level of safety to be achieved due to the limited size, scope and area of operations.

D. The granting of this exemption for this FAR is in the public interest and serves the greater good for all the reasons previously stated on page 2 and 3 of this petition.