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

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

May 26, 2015

Exemption No. 11692
Regulatory Docket No. FAA–2015–0220

Ms. Marjorie K. Conner
Counsel for OpenSky Drones, LLC
Attorney
700 West View Terrace
Alexandria, VA 22302

Dear Ms. Conner:

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.

The Basis for Our Decision

By letters dated January 21 and May 4, 2015, you petitioned the Federal Aviation Administration (FAA) on behalf of OpenSky Drones, LLC (hereinafter petitioner or operator) for an exemption. The exemption would allow the petitioner to operate an unmanned aircraft system (UAS) to conduct aerial view, video recording, signal analysis, laser measurement and concentration measurements..

See Appendix A for the petition submitted to the FAA describing the proposed operations and the regulations that the petitioner seeks an exemption.

The FAA has determined that good cause exists for not publishing a summary of the petition in the Federal Register because the requested exemption would not set a precedent, and any delay in acting on this petition would be detrimental to the petitioner.

Airworthiness Certification

The UAS proposed by the petitioner are the DJI S1000 Spreading Wings, DJI Inspire, DJI 450 Flame Wheel, and DJI 550 Flame Wheel..

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. 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, OpenSky Drones, 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) 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, OpenSky Drones, 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 S1000 Spreading Wings, DJI Inspire, DJI 450 Flame Wheel, and DJI 550 Flame Wheel 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 Colombia, 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

January 21, 2015

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

Re: Exemption Request Section 333 of the FAA Reform Act and Part 11 of the Federal Aviation Regulations from 14 C.F.R. 45.23(b);14 CFR Part 21;14 CFR 61.113 (a) & (b); 91.7 (a);91.9 (b) (2);91.103(b); 91.109;91.119; 91.121; 91.151(a);91.203(a) & (b);91.405 (a); 91.407(a) (1); 91.409 (a) (2);91.417 (a) & (b).

To whom it may concern,

In pursuant with Section 333 of the FAA Modernization and Reform Act of 2012 and 14 C.F.R. Part 11, OpenSky Drones LLC (OpenSky), an operator of a small Unmanned Aircraft System (sUAS) for Environemental/Civil/Structural engineering industry, seeks an exemption from the Federal Aviation Regulations (FARs) to allow commercial operations of its sUAS.

OpenSky's requested exemption would permit the operation of a sUAS under controlled conditions in project airspace that is: (i) limited, (ii) predetermined, (iii) subject to controlled access through our customers, and (iv) provides greater safety in connection with aircraft operations. OpenSky believes that an exemption in the engineering industry would enhance safety and fulfill the Secretary of Transportation's (the FAA Administrator's) responsibilities to establish safe operations of sUAS.

A current WorkZoneSafety.org published document analyzes work zone fatalities by discipline and roles from 2003 to 2013. According to this report, 10-year itemization records fatalities for Civil Engineers, Construction Supervisors and Construction inspectors at over 240 deaths. This is remarkable because these numbers consist of only first-line supervisory/overseeing roles with limited time on site.

Currently, there are many applications in the Environmental/Civil/Structural engineering field that requires access through inefficient, tedious and dangerous methods. These tasks require an engineer to traverse, climb, or get in dangerous proximity of a subject to determine the correct action to take. Site visits and explorations for areas such as deteriorating bridge structures, eroded and unstable river channel banks or sinkholes and heavily trafficked road construction zones present an extremely hazardous environment for engineering data collection. Even surface parking studies require an long schedule of engineers on foot walking through active parking lots and streetscapes to manually record parking behaviors. In addition, areas of environmental contamination pose enormous respiratory risk for engineering inspections and site survey. OpenSky intends to utilize sUAS to greatly reduce the dangers of human exposure in these sites.

OpenSky is an engineering company in both Civil/Structural as well as RF disciplines specializing in remote sensing services across the continental United States. OpenSky's Engineers have been involved in engineering designs and inpections industry over the last 40 years. OpenSky's sUAS flights will be flown to achieve an aerial view, video recording, signal analysis, laser measurement and concentration measurements.

Data captured from the flights will provide valuable date to assist in engineering proposals, design and necessary actions.

The sUAS missions will be planned and executed with the highest level of safety in mind. The primary objective is safely collect data within a relatively small flight window (typically 15 mins) and return to landing. Even in areas of heavy traffic, flights will be conducted as to minimize direct overhead exposure to people and moving traffic, eg. Over road centerline, grass swales, etc. For every flight that OpenSky performs, inspection task performed will be preplanned and coordinated with the crew to ensure full safety and success. Flight elevations will typically be below 200ft MSL and in rare cases, be between 200 – 400ft MSL.

Information Supporting this Petition as Specified in 14 C.F.R. §11.81

(a) Your name and mailing address and, if you wish, other contact information such as a fax number, telephone number, or e-mail address;

OpenSky Drones, LLC.
Dan Q Pham, P.E.
12453 NW 44th St
Coral Springs, FL 33095
(954) 918-3888
Email: dan@OpenSkydrones.com

(b) The specific section or sections of 14 C.F.R. from which OpenSky seeks an exemption

- 21 – Subpart H Certification procedures for products and parts, Airworthiness Certificates
- 45.23 – Display of marks; general
- 61.113 - Private pilot privileges and limitations: Pilot in command
- 91.103 – Preflight Actions
- 91.105 – Flight crewmembers at stations
- 91.109 – Flight instruction; Simulated instrument flight and certain flight tests
- 91.119 – Minimum safe altitudes: General
- 91.121– Altimeter settings
- 91.151– Fuel requirements for flights in Visual Flight Rules (VFR) conditions
- 91.203 – Civil aircraft: certification required
- 91.405 – Maintenance required
- 91.407 – Operation after maintenance, preventative maintenance, rebuilding, and alteration
- 91.409 – Inspections
- 91.417 – Maintenance records

We believe an exemption from the above regulations will allow OpenSky to conduct the needed work as described above.

(c) The extent of relief OpenSky seeks, and the reason OpenSky seeks the relief
OpenSky seeks an exemption for several provisions of 14 C.F.R. Parts 21, 45, 61, and 91 to the extent to operate small UASs around for engineering data collection.

14 C.F.R. 21 – Subpart H Certification procedures for products and parts, Airworthiness Certificates

OpenSky seeks exemption from **14 C.F.R. 21, Subpart H** which states the certification procedures for products and parts as well as airworthiness certificates. Due to the limited airspace that OpenSky will be using at project locations across the country, we are seeking exemption to the airworthiness certification process. OpenSky has developed our own training procedures and regulations to promote and provide safe flying experiences for our PIC(s) which can be viewed in section (e) of this petition. The sUAS to be operated hereunder is less than 55 lbs. 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 the Manual. Unlike other civil aircraft, operations under this exemption will be tightly controlled and monitored by both the operator, pursuant to the Manual's requirements, and under the requirements and in compliance with local public safety requirements, to provide security for the area of operation.

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

OpenSky seeks exemption from **14 C.F.R. 45.23**, which discusses the display of marks. Specifically, section 45.23 states, "(a) each operator of an aircraft must display on that aircraft marks consisting of the Roman capital letter "N" (denoting United States registration) followed by the registration number of the aircraft. Each suffix letter used in the marks displayed must also be a Roman capital letter (b) when marks include only the Roman capital letter "N" and the registration number is displayed on limited, restricted or light-sport category aircraft or experimental or provisionally certificated aircraft, the operator must also display on that aircraft near each entrance to the cabin, cockpit, or pilot station, in letters not less than 2 inches nor more than 6 inches high, the words "limited," "restricted," "light- sport," "experimental," or "provisional," as applicable".

OpenSky will need exemption from this regulation due to the small size of the aircraft and that there is no cabin, cockpit, or pilot station for the aircraft. The words "Experimental" can be placed on the fuselage in compliance with §45.29 (f) where the pilot, observer and others working with the sUAV 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.

14 C.F.R. § 61.113 (a) & (b): Private Pilot Privileges and Limitations: Pilot in Command.

OpenSky seeks exemption from 14 C.F.R. 61.113, which discusses private pilot privileges and limitations for the Pilot in command (PIC).

OpenSky is seeking exemption from this regulation, because OpenSky believes that there is inconclusive evidence that a person with a private pilot certificate can successfully maneuver a sUAS without first hand flight experience with the particular sUAS. In fact, having a private pilot license does not automatically ensure competence at flying an sUAS in 3rd person view as required to properly operate an sUAS within the required line of sight. However, we believe that the PIC and our FOVO (Field Operation Visual Observer) must be able to understand and correctly interact with the general aviation community. Therefore, we believe our own flight training with the sUAS will be more than satisfactory. Our PIC and FOVO will be both certified in Ground School training to be able to properly interact with General Aviation protocols. They will also actively pursue a private pilot's license as well have the necessary medical qualifications.

14 C.F.R. 91.103 – Preflight Actions

OpenSky seeks exemption from 14 C.F.R. 91.103 which states that 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; actions, including reviewing weather, flight battery requirements, landing and takeoff distances, and aircraft performance data before starting a flight.

OpenSky's will be operating our sUAS in VFR. Our operations manual already includes preflight procedures directly pertaining to our sUAS which includes equipment checklist as well a preplanning details regarding weather conditions, review of any possible flight path of general aviation, our mission flight path and weather conditions amongst other parameters required to complete the mission.

14 C.F.R. 91.105 – Flight crewmembers at stations

OpenSky seeks exemption from 14 C.F.R. 91.105, which discusses flight crewmembers at stations. Specifically, 91.105 states "(a) During takeoff and landing, and while en route, each required flight crewmember shall (1) Be at the crewmember station unless the absence is necessary to perform duties in connection with the operation of the aircraft or in connection with physiological needs; and (2) Keep the safety belt fastened while at the crewmember station. (b) Each required flight crewmember of a U.S.-registered civil aircraft shall, during takeoff and landing, keep his or her shoulder harness fastened while at his or her assigned duty station. This paragraph does not apply if (1) The seat at the crewmember's station is not equipped with a shoulder harness; or (2) The crewmember would be unable to perform required duties with the shoulder harness fastened. OpenSky will need exemption from this regulation due to the fact that the sUAS will not have a flight crew or crew stations other than the PIC and a Spotter. The PIC will also not have to be restrained into a seat via shoulder harness or safety belt at the time of the flight.

14 C.F.R. 91.109 - Flight instruction; Simulated instrument flight and certain flight tests
OpenSky seeks exemption from 14 C.F.R. 91.109, which discusses flight instruction, simulated instrument flight, and certain flight tests. Specifically, 91.109 states "(a) 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. However, instrument flight instruction may be given in an airplane that is equipped with a single, functioning throw over control wheel that controls the elevator and ailerons, in place of fixed, dual controls, when (1) The instructor has determined that the flight can be conducted safely; and (2) The person manipulating the controls has at least a private pilot certificate with appropriate category and class ratings. (b) An airplane equipped with a single, functioning throw over control wheel that controls the elevator and ailerons, in place of fixed, dual controls may be used for flight instruction to conduct a flight review required by §61.56 of this chapter, or to obtain recent flight experience or an instrument proficiency check required by §61.57 when (1) The airplane is equipped with operable rudder pedals at both pilot stations; (2) The pilot manipulating the controls is qualified to serve and serves as pilot in command during the entire flight; (3) The instructor is current and qualified to serve as pilot in command of the airplane, meets the requirements of §61.195(b), and has logged at least 25 hours of pilot-in-command flight time in the make and model of airplane; and (4) The pilot in command and the instructor have determined the flight can be conducted safely. (c) No person may operate a civil aircraft in simulated instrument flight unless (1) The other control seat is occupied by a safety pilot who possesses at least a private pilot certificate with category and class ratings appropriate to the aircraft being flown. (2) The safety pilot has adequate vision forward and to each side of the aircraft, or a competent observer in the aircraft adequately supplements the vision of the safety pilot; and (3) Except in the case of lighter-than-air aircraft, that aircraft is equipped with fully functioning dual controls. However, simulated instrument flight may be conducted in a single-engine airplane, equipped with a single, functioning, throw over control wheel, in place of fixed, dual controls of the elevator and ailerons, when (i) The safety pilot has determined that the flight can be conducted safely; and (ii) The person manipulating the controls has at least a private pilot certificate with appropriate category and class ratings. (d) No person may operate a civil aircraft that is being used for a flight test for an airline transport pilot certificate or a class or type rating on that certificate, or for a part 121 proficiency flight test, unless the pilot seated at the controls, other than the pilot being checked, is fully qualified to act as pilot in command of the aircraft". Again, Except when necessary for takeoff or landing, no person may operate an aircraft below the following altitudes: (a) Anywhere. An altitude allowing, if a power unit fails, an emergency landing without undue hazard to persons or property on the surface. (b) Over congested areas. Over any congested area of a city, town, or settlement, or over any open air assembly of persons, an altitude of 1,000 feet above the highest obstacle within a horizontal radius of 2,000 feet of the aircraft. (c) Over other than congested areas. An altitude of 500 feet above the surface, except over open water or sparsely populated areas. In those cases, the aircraft may not be operated closer than 500 feet to any person, vessel, vehicle, or structure. (d) Helicopters, powered parachutes, and weight-shift-control aircraft. If the operation is conducted without hazard to persons or property on the surface— (1) A helicopter may be operated at less than the minimums prescribed in paragraph (b) or (c) of this section, provided each person operating the helicopter complies with any routes or altitudes specifically prescribed for helicopters by the FAA; and (2) A powered

parachute or weight-shift-control aircraft may be operated at less than the minimums prescribed in paragraph (c) of this section (a) Each person operating an aircraft shall maintain the cruising altitude or flight level of that aircraft, as the case may be, by reference to an altimeter that is set, when operating—(1) Below 18,000 feet MSL, to—(i) The current reported altimeter setting of a station along the route and within 100 nautical miles of the aircraft; (ii) If there is no station within the area prescribed in paragraph (a)(1)(i) of this section, the current reported altimeter setting of an appropriate available station; or (iii) In the case of an aircraft not equipped with a radio, the elevation of the departure airport or an appropriate altimeter setting available before departure; or (2) At or above 18,000 feet MSL, to 29.92'' Hg. (b) The lowest usable flight level is determined by the atmospheric pressure in the area of operation as shown in the following table:

OpenSky believes that there is inconclusive evidence that a person with a private pilot certificate or license can successfully maneuver or train someone to use an sUAS without first hand flight experience with the particular sUAS. Flying in 3rd person orientation requires built-up experience in that form of flying for many years. Therefore, we believe our own flight training, pilot protocols and first hand experiences with the sUAS as laid out in our Flight Operations Manual meets and exceeds the requirements necessary to safely operate our sUAS for the tasks we purpose . Also, the sUAS will be operated by a remote control, which will only require a single person operator and dual controls will not be necessary.

14 C.F.R. 91.119 – Minimum safe altitudes: General

OpenSky seeks exemption from 14 C.F.R. 91.119, which discusses minimum safe altitudes. Since project needs are low-level data collection and the majority of flight will be less than 200ft MSL and no more than 400ft MSL, this would not pertain to our sUAS operations

14 C.F.R. 91.121– Altimeter settings

OpenSky seeks exemption from 14 C.F.R. 91.121, which discusses altimeter settings for lowest usable flight level.

C.F.R. 91.121 states,

Current altimeter setting	Lowest usable flight level
29.92 (or higher)	180
29.91 through 29.42	185
29.41 through 28.92	190
28.91 through 28.42	195
28.41 through 27.92	200
27.91 through 27.42	205
27.41 through 26.92	210

(c) To convert minimum altitude prescribed under §§91.119 and 91.177 to the minimum flight level, the pilot shall take the flight level equivalent of the minimum altitude in feet and add the appropriate number of feet specified below, according to the current reported altimeter setting:"

Current altimeter setting	Adjustment factor
29.92 (or higher)	None
29.91 through 29.42	500
29.41 through 28.92	1,000
28.91 through 28.42	1,500
28.41 through 27.92	2,000
27.91 through 27.42	2,500
27.41 through 26.92	3,000

OpenSky's sUAS uses both GPS altitude and barometric sensors and relays that information to our ground station. However, this data is used help the sUAS to automatically maintain position hold at the required elevation and therefore this code is not pertinent the functionality of this sUAS.

14 C.F.R. 91.151– Fuel requirements for flights in Visual Flight Rules (VFR) conditions
OpenSky seeks exemption from 14 C.F.R. 91.151, which discusses fuel requirements for flight in VFR conditions. Specifically, 91.151 states "(a) No person may begin a flight in an airplane under VFR conditions unless (considering wind and forecast weather conditions) there is enough fuel to fly to the first point of intended landing and, assuming normal cruising speed— (1) During the day, to fly after that
for at least 30 minutes; or (2) At night, to fly after that for at least 45 minutes. (b) No person may begin a flight in a rotorcraft under VFR conditions unless (considering wind and forecast weather conditions) there is enough fuel to fly to the first point of intended landing and, assuming normal cruising speed, to fly after that for at least 20 minutes ".

OpenSky's sUAS has a typical mission time of less than 15 minutes with maximum flight time of 25 minutes. Since this amount less than the 30 minute reserve minimum, this reserve minimum would not even make sense in allowing the sUAS a chance to fly. According to OpenSky's aircraft flight manual, the PIC is instructed to maintain flight until battery power reaches 25%, or 1st level warning. At this level, landing procedures will be intiated. Once the sUAS reads 20%, 2nd level warning, the flight control system automatically take over and initiates safe landing sequence at the logged in takeoff point. OpenSky policy outlined in our operating flight manual achieves satisfactory safety standards.

14 C.F.R. 91.203 - Civil aircraft: certification required
OpenSky seeks exemption from 14 C.F.R. 91.203, which discusses states:

(a) Except as provided in §91.715, no person may operate a civil aircraft unless it has within it the following: (1) An appropriate and current airworthiness certificate. Each U.S. airworthiness certificate used to comply with this subparagraph (except a special flight permit,
a copy of the applicable operations specifications issued under §21.197(c) of this chapter, appropriate sections of the air carrier manual required by parts 121 and 135 of this chapter containing that portion of the operations specifications issued under §21.197(c), or an authorization under §91.611) must have on it the registration number assigned to the aircraft under part 47 of this chapter. However, the airworthiness certificate need not have on it an assigned special identification number before 10 days after that number is first affixed to the aircraft. A revised airworthiness certificate having on it an assigned special identification number, that has been affixed to an aircraft, may only be obtained upon application to an FAA Flight Standards district office. (2) An effective U.S. registration certificate issued to its owner or, for operation within the United States, the second copy of the Aircraft registration Application as provided for in §47.31(c), or a registration certification issued under the laws of a foreign country. (b) No person may operate a civil aircraft unless the airworthiness certificate required by paragraph (a) of this section or a special flight authorization issued under §91.715 is displayed at the cabin or cockpit entrance so that it is legible to passengers or crew. (c) No person may operate an aircraft with a fuel tank installed within the passenger compartment or a baggage compartment unless the installation was accomplished pursuant to part 43 of this chapter, and a copy of FAA Form 337 authorizing that installation is on board the aircraft. (d) No person may operate a civil airplane (domestic or foreign) into or out of an airport in the United States unless it complies with the fuel venting and exhaust emissions requirements of part 34 of this chapter".
certifications. Specifically, 91.203 states "

OpenSky believes that an appropriate and current airworthiness certificate would not be necessary to fly a sUAS given the size of the aircraft and the necessary level of skill needed to operate the aircraft. Before putting in to service, each of our sUAS goes through our own airworthiness

proceedures of miminum test flight and reliability checks. Also, our sUAS are recalibrated each at the site location before each flight to ensure that all systems functions as designed. OpenSky seeks exemption from this regulation because we believe this rule was not meant for a sUAS and operators.

14 C.F.R. 91.405, 91.407, 91.409, and 91.417

OpenSky seeks exemption from 14 C.F.R. 91.405, 91.407, 91.409, and 91.417, which discusses required aircraft maintenance, operation after maintenance, preventive maintenance, rebuilding, or alteration, inspections, and maintenance records. In OpenSky's aircraft flight manual, maintenance and inspection procedures have been established for the aircraft. OpenSky believes these regulations are meant for manned operated aircrafts and not unmanned systems, therefore making them unnecessary.

Nevertheless, we seek an exemption from any such specific provisions to the extent FAA finds it necessary to grant this request.

(d) The reasons why granting OpenSky's request would be in the public interest; that is, how it would benefit the public as a whole.

OpenSky is classified as an engineering company by the U.S. Department of Transportation and provides services to the engineering industry. OpenSky's use of a sUAS can assist in collecting and verifying critical data for design project. With OpenSky's sUAS usage in the engineering industry, we will be able to gather valuable information to help increase safety and productivity. In addition, the sUAS flights will be putting fewer lives in danger.

(e) The reasons why granting the exemption would not adversely affect safety, or how the exemption would provide a level of safety at least equal to that provided by the rule from which OpenSky seeks exemption Our Engineering department will provide a level of safety that exceeds the level of safety required by the FAA for its use on sUAS. The following are OpenSky's safety procedures, features, regulations, and operating specifications for our sUAS:

- Our Squadron Leader/Chief Pilot in Charge is an engineer who has 10 years of RC Model building and flight experience with over 1000 flight hours in Fixed-wing, Helicopter and Multi-Rotor 3rd person flight. He has been involved with flight design, experimentation and system optimization for model industry since 2008 though SAPAC, Inc. models.
- Our staff includes an FAA-rated commercial flight instructor (ret) who coordinates our FOVO team in integration with general aviation.
- The Pilot In Command (PIC) and Field Operations Visual Observer (FOVO) will be required to wear hard hats, safety vests, and safety glasses to protect the head and eyes from potential mishaps during given operational flights including training or testing of sUAS.
- The flight area of the sUAS will be observed for best take off and landing locations. Desired conditions include: flat and level surfaces clear of debris, at least 15ft from power lines and structures, and a minimum distance of 12ft from the PIC and observers.
- The sUAS will also be in the Visual Line of Sight (VLOS) to both the PIC and FOVO during all flights.
- Flights must take place during good weather conditions with no rain, low laying clouds, or heavy winds. All flights will take place during daylight hours with no evening or late night flights.
- The PIC(s) of the sUAS will at least have 12 training hours or 24 flights accrued before being designated working flights around cellular communication towers.
- All batteries must be charged completely before each flight and each flight must end when the battery has a 25% power level remaining.

- A visual safety inspection will occur before each flight, testing propeller tightness, security mount of camera/detection equipment, remote range test, and proper safety equipment is adorned to PIC and FOVO.
- The sUAS will be flown under a height of 500 ft AGL.
- No PIC or FOVO will engage in, nor may a PIC or FOVO permit, any activity during a critical phase of flight so as to ensure that the sUAS is in a condition for safe flight operation and in a configuration appropriate for the purpose of the intended flight.
- If there is more than just an operator at a site during a flight, the PIC operator and observer or FOVO will maintain two-way communication with each other during all operations; if unable to maintain two-way communications, or if any condition occurs that may otherwise cause the operation to be unsafe, the operator will immediately conclude the operation.
- If the communication link is lost, the sUAS will go into fail-safe mode and safely descend to its designated home-point location. If the communication link is reconnected during fail-safe mode, control of the sUAS can be regained before landing occurs at the home-point location.
- There is no fuel or payload to the sUAS, therefore there will be no potential explosives or risk of explosion if a crash occurs with the sUAS.
- The sUAS will feature a built in compass that will be recalibrated at every site to maintain accurate directional readings. The compass will also help in keeping the sUAS stable during flights.
- The sUAS will record GPS location data once Ready to Fly status has been obtained. A minimum of 6 satellites will activate the Ready to Fly status.
- The weight of the sUAS is less than 10 lbs. with a maximum ascent speed of 6 m/s and a descent speed of 2 m/s. The aircrafts maximum flight speed is 15 m/s.
- The aircrafts vertical and horizontal aspect concerning hovering accuracy is 0.8m and 2.5m respectfully.
- The typical aircraft wheelbase will be less than 600mm in length.
- The aircraft runs off a Li-Po battery.

(f) A summary FAA can publish in the FEDERAL REGISTER, stating: (1) The rule from which you seek the exemption; and (2) A brief description of the nature of the exemption you seek

Petitioner: OpenSky Drones, LLC.

Sections of 14 C.F.R. Affected: 21 Subpart H; 45.23(b); 61.113(a)(b); 91.103; 91.105; 91.109; 91.119(c); 91.121(a)(1)(iii); 91.151(a)(1); 91.203; 91.405; 91.407; 91.409; and 91.417

Description of Relief Sought: Petitioner seeks relief from the requirements of 14 C.F.R. 21 Subpart H; 45.23(b); 61.113(a)(b); 91.103; 91.105; 91.109; 91.119(c); 91.121(a)(1)(iii); 91.151(a)(1); 91.203; 91.405; 91.407; 91.409; and 91.417 to conduct data collection for Environmental/Civil/Structural engineering services using operating procedures that meet or exceed those that FAA requires.

(g) Any additional information, views or arguments available to support your request

Please see the introduction to this exemption request.

(h) If you want to exercise the privileges of your exemption outside of the United States, the reason why you need to do so

The Operations described in this exemption request will be conducted wholly within the United States.

Attached hereto, and submitted as a **confidential** document, is our Field Operations Manual. We respectfully submit that good cause exists so that this confidential manual does not need to be published in the Federal Register

Please do not hesitate to contact me via email at dan@OpenSkydrones.com if you have any questions or concerns.

Respectfully submitted,

Dan Q Pham, P.E.
Vice President
OpenSky Drones, LLC