



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

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

April 9, 2015

Exemption No. 11311
Regulatory Docket No. FAA-2014-1055

Mr. Albert J. Pucciarelli
Counsel for Next Generation Aviation Services, L.L.C.
McElroy, Deutsch, Mulvaney & Carpenter, LLP
40 West Ridgewood Avenue
Ridgewood, NJ 07450

Dear Mr. Pucciarelli:

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 letter dated December 15, 2014, you petitioned the Federal Aviation Administration (FAA) on behalf of Next Generation Aviation Services, L.L.C. (hereinafter petitioner or operator) for an exemption. The exemption would allow the petitioner to operate an unmanned aircraft system (UAS) to conduct research and development; training; aerial photography for real estate, construction firms; to assist first responders; and to enhance public awareness of UASs.

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 S1000+.

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, 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, Next Generation Aviation Services, L.L.C. 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, Next Generation Aviation Services, L.L.C. 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+ 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.nts.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 April 30, 2017, unless sooner superseded or rescinded.

Sincerely,

/s/

John Barbagallo

Acting Deputy Director, Flight Standards Service

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December 15, 2014

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

RECEIVED
DEPARTMENT OF
TRANSPORTATION
OFFICE OF
OPERATIONS
DEC 16 2014

Re: Petition of Next Generation Aviation Services, L.L.C.
("Petitioner") for an Exemption Pursuant to Section 333 of the FAA
Modernization and Reform Act of 2012

Ladies and Gentlemen:

Pursuant to Section 333 of the FAA Modernization and Reform Act of 2012 (the "Reform Act") and 14 C.F.R. Part 11, Petitioner, hereby applies for an exemption from the Federal Aviation Regulations ("FARs") identified below, to allow commercial operations of small unmanned aircraft and associated elements ("UAS").

The exemption is made based on information in this petition, as well as Petitioner's General Operations and Safety Manual ("Operations Manual") and the flight and maintenance manuals for the UASs identified and incorporated by reference into Section 2 of the Operations Manual. Petitioner submits these supporting materials as confidential documents under 14 C.F.R. § 11.35(b), as they contain confidential commercial and proprietary information that Petitioner has not and will not share with others. Similarly, these documents contain operating conditions and procedures that are not available to the public and are protected from release under the Freedom of Information Act, 5 U.S.C. § 552 *et seq.*, and any other requirements established by the FAA pursuant to Section 333 of the FAA Reform Act.

For your convenience, the petition is organized as follows:

- I. Description of Petitioner**
- II. Types of Operations**
 - A. Request to Use UASs for R&D at Test Sites Controlled by Petitioner**
 - B. Request to Use UASs for photography utilized in the operation of First Responders, for use by Real Estate and Construction firms and to enhance public awareness of the utility of UASs.**
- III. Relevant Statutory Authority**

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- IV. Petitioner's Proposed UAS Operations Meet the Requirements of Section 333 of the Reform Act**
- V. Regulations From Which Exemption is Requested**
 - A. 14 C.F.R. Part 21, Subpart H — Airworthiness Certificates and 14 C.F.R. § 91.203**
 - B. 14 C.F.R. Part 27 Airworthiness Standards: Normal Category Rotorcraft**
 - C. 14 C.F.R. § § 91.9(c), 45.23(b) and 45.27(a): Aircraft Marking and Identification Requirements**
 - D. 14 C.F.R. § 91.9(b)(2): Civil Aircraft Flight Manual in the Aircraft and 14 C.F.R. § 91.203(a) and (b): Carrying Civil Aircraft Certification and Registration**
 - E. 14 C.F.R. § 91.7(a): Civil Aircraft Airworthiness**
 - F. 14 C.F.R. § 91.103: Preflight Action**
 - G. 14 C.F.R. § 91.109(a): Flight Instruction**
 - H. 14 C.F.R. § 91.119: Minimum Safe Altitudes**
 - I. 14 C.F.R. § 91.121: Altimeter Settings**
 - J. 14 C.F.R. § 91.151(a): Fuel Requirements for Flight in VFR Conditions**
 - K. 14 C.F.R. § 91.405(a), 91.407(a)(1), 91.409(a)(2); 91.417(a) and (b): Maintenance Inspections**
 - L. 14 C.F.R. § 61.113**
- VI. Drug and Alcohol Program**
- VII. Public Interest**
- VIII. Privacy**
- IX. Federal Register Summary**
- X. Conclusion**

I. DESCRIPTION OF PETITIONER

Petitioner is wholly-owned by Frank R. Galella, III, a U.S citizen, who is also the sole owner of FRG III, Inc. d/b/a “Lincoln Park Aviation” (“LPA”). LPA is a leading FAA Repair Station (LKPR101K) for many types and manufacturers of general aviation aircraft. LPA employs several Airframe and Powerplant technicians (“A&Ps”), Inspection Authorization personnel (I.As) and FAA certified flight instructors (“CFIs”). Petitioner has vast experience with airframe, propulsion, avionics and composites and virtually all complex systems installed on modern-day general aviation aircraft. This broad knowledge of working with certified aircraft for many years has major benefits that carry over into the UAS sector of our business and gives Petitioner a distinct advantage.

Petitioner has been building, servicing and flying UASs for the last five years. It detailed knowledge of UAS systems and components, which has resulted in flight experiences totaling hundreds of hours without incident.

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Petitioner seeks an exemption to use UASs to conduct research and development ("R&D") into new and innovative ways to operate and maintain UASs for commercial purposes and in furtherance of public safety within the National Airspace ("NAS") system. Exemption is further sought to enable Petitioner to offer services to real estate brokers and developers, the construction industry, utilities, first responders, film production companies, and any related entities that can utilize the safe and convenient operation of UAS type aircraft where the use of typical certified aircraft is not possible or the cost is prohibitive. In addition, Petitioner will proactively encourage UAS capability and safety demonstrations to the general public and local government agencies in an effort to collectively convince these organizations that the operation of UASs is safe, controlled and in the public interest.

Petitioner has assembled a UAS team, including an array of experienced aviation professionals, to cover all of the skill sets necessary to offer safe and effective UAS services. In addition, Petitioner's employees already have significant experience in the maintenance and operation of civil general aviation aircraft that will equip them to deal effectively with issues arising in connection with the safe use of UASs and planning for both normal operations and contingencies that might affect flight safety.

The model UAS that Petitioner intends to use within the scope of the requested exemptions is the DJI S1000+Premium but Petitioner may not exclusively use this model UAS. But in all cases, the UAS vehicle will weigh 55 pounds or less.

The contact information for Petitioner is as follows:

Next Generation Aviation Services L.L.C.
c/o Lincoln Park Aviation
425 Beaverbrook Road
Lincoln Park, NJ 07035
Attn.: Frank Galella
Tel +1 973-633-0450
Email frankg@lpaviation.com

II. TYPES OF OPERATIONS

A. Request to Use UASs for R&D at Test Site controlled by Petitioner

Petitioner is requesting exemptions pursuant to Section 333 to conduct research and development at Petitioner's facilities which are depicted in the Operations Manual. The testing facilities are not open to the public and access will be restricted to Petitioner and its corporate affiliates' employees and/or consultants engaged in R&D or R&D-related work. UAS testing will occur outside navigable airspace at altitudes of 400 feet AGL or less, daytime VFR operation only in visual line of site ("VLOS"). The test sites will enable Petitioner to evaluate how the

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UAS vehicles will operate and capture images over various types of buildings and in various conditions.

The test areas will also be used for maintenance evaluation and pilot training purposes. Petitioner's R&D efforts are focused on meeting the needs of its own research and development efforts in the area of UAS operations and maintenance, training for intended UAS owners and operators, real estate and land photography for local and regional customers, to assist local and regional first responders as they may deem appropriate and to enhance public awareness of the utility and safe operation of UAS vehicles for commercial purposes.

B. Request to Use UAS vehicles (1) for research and development, (2) for training, (3) for photography to assist Real Estate and Construction firms, (4) to assist First Responders and (5) to enhance public awareness of the utility of UASs.

Petitioner requests permission to operate UAS vehicles for the purpose of conducting research and development in connection with the manufacture, operation and maintenance of UASs, for training of its own personnel in the areas of UAS operations and maintenance, for training for intended UAS owners and operators, for real estate and land photography for local and regional customers and to assist local and regional first responders as they may deem appropriate. Petitioner also intends to enhance public awareness of the utility and safe operation of UAS vehicles for commercial purposes and, in furtherance of this objective, Petitioner requests permission to allow its operation of UAS vehicles for the purposes stated above to be open to the public, including participation in local FAA or Government seminars and demonstrations relating to the safe and effective operation of UAS vehicles.

As part of this effort, Petitioner is also willing to partner with appropriate federal, state, and local governments and first responders to ensure full cooperation and coordination with their needs to the extent Petitioner's UAS services may be useful to them. This will include information sharing that can further assist first responders.

As set forth in the attached Operations Manual, flights by Petitioner will be conducted under a strict set of guidelines. UAS vehicles will be flown only over Petitioner's property or over property where permission has been obtained from the owner. Strict safety measures will be in place to ensure that there is limited to no risk to members of the public who are not involved in the operation.

III. RELEVANT STATUTORY AUTHORITY

This petition for exemption is submitted in accordance with Section 333(a) through (c) of the FAA Modernization and Reform Act of 2012. Congress has directed the FAA "to safely accelerate the integration of civil unmanned aircraft systems into the national airspace system."

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Pursuant to Section 333 of the Reform Act, the FAA Administrator is to permit unmanned aircraft systems to operate in the NAS where it is safe to do so based upon the following considerations:

- The UAS vehicle's size, weight, speed and operational capability;
- Operation of the UAS in close proximity to airports and populated areas; and
- Operation of the UAS within the visual line of sight of the operator.¹

Additionally, the FAA Administrator has general authority to grant exemptions from the agency's safety regulations and minimum standards when the Administrator decides that a requested exemption is in the public's interest. *See* 49 U.S.C. § 106(f) (defining the authority of the Administrator); 49 U. S.C. § 44701(f) (permitting exemptions from §§ 44701(a), (b) and §§ 44702 —44716, *et seq.*). A party requesting an exemption must explain the reasons why the exemption: (1) would benefit the public as a whole, and (2) would not adversely affect safety (or how it would provide a level of safety at least equal to the existing rules. *See* 14 C.F.R. § 11.81 (petitions for exemption).

IV. PETITIONER'S PROPOSED OPERATIONS MEET THE REQUIREMENTS OF SECTION 333 OF THE REFORM ACT

The proposed operations in this Petition for Exemption qualify for expedited approval under Section 333 of the Reform Act. Each of the statutory criteria and other relevant factors are satisfied.

A. Approval is Warranted Based on the UAS's Size, Weight and Operational Capability

Petitioner will employ the UAS vehicles identified in Section 2 of the accompanying Operations Manual. These UAS vehicles will be used for all of the operations as set forth in the Operations Manual, each of which has characteristics in common that warrant approval. All of the UAS vehicles will be limited to a maximum flight speed of 40 m.p.h. vertical ascent speed of 15 m.p.h, and a maximum weight of fifty (50) pounds. Each of the UAS vehicles has an integrated GPS system to calculate its position and height and to relay that information via a secure connection to the operator. In addition, each UAS contains a failsafe mode that will guide the UAS if its connection to the remote controller is lost. The system permits the vehicle to return to a predetermined location and land in order to prevent injury or property damage.

¹ Section 333(b)(1) of the Reform Act

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B. Approval is Warranted Based on the Operational Restrictions Set Forth in the Operations Manual

Petitioner's Operations Manual and the manufacturers' maintenance and flight manuals contain all of the procedures and limitations necessary to successfully perform R&D. To assist the FAA in its safety assessment of Petitioner's operations, the operational limitations and conditions, listed below, will be adhered to. This will ensure a level of safety equal to or exceeding the level of safety for operations conducted under current regulatory guidelines:

1. The UAS vehicles employed by Petitioner will weigh fifty (50) pounds or less.
2. Flights will be operated within line of sight of a pilot and an observer.
3. Maximum total flight time for each operational flight will be limited to the amount of time the UAS can be flown and still maintain a reserve battery power of no less than 25%.
4. Flights will be operated at an altitude of no more than 400 feet AGL and will not be conducted within navigable airspace. Flight will be conducted only in VLOS during daylight hours and in VFR conditions.
5. Flights will be operated at a lateral distance of no less than 100 feet from any persons or property not associated with the operation who have not given prior permission for more proximate operation.
6. Flights will be limited to a speed of 50 m.p.h. and vertical ascent of 15 m.p.h.
7. Minimum crew for each operation will consist of the UAS pilot-in-command ("PIC"), one or more visual observers, as necessary to safely conduct the mission, and a sensor operator, if the sensor requires human direction or control.
8. The PIC will have at least a private pilot's license and current Class III medical certificate and will have sufficient experience and recurrent training to safely conduct the flight in accordance with the standards set forth in the Operations Manual.
9. The observer designated for any operation will be in constant voice contact with the PIC.
10. UAS vehicles will operate in accordance with the safety and operational requirements of their respective Manuals.

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11. Prior to the operation, a mission plan will be prepared setting forth the limitations for the flight as well as contact and hazard information.
12. A Notice to Airmen ("NOTAM") will be issued not more than 72 hours in advance of flight, but not less than 48 hours before flight.
13. A Certificate of Authorization will be obtained prior to flight.
14. All required permissions and permits will be obtained from territorial, state, county or city jurisdictions, including local law enforcement, fire or other appropriate governmental agencies.
15. The operator will coordinate all flights with the appropriate Flight Standards District Office.
16. If a UAS loses communications or GPS guidance, it will have the capability to return to a pre-determined location within the operational area and land.
17. Contingency plans will be in place to safely terminate flight if there is a loss of communication between the PIC and the observer(s).

V. REGULATIONS FROM WHICH EXEMPTION IS REQUESTED

The Federal Aviation Act expressly grants the FAA the authority to issue exemptions. This statutory authority, by its terms, includes exempting civil aircraft, as the term is defined under § 40101 of the Act, including UASs, from its safety regulations and minimum standards when the Administrator decides that a requested exemption is in the public interest.²

Petitioner seeks an exemption from several interrelated provisions of 14 C.F.R. Parts 21, 45, 61 and 91 for purposes of conducting the requested operations using a UAS. Listed below are (1) the specific sections of 14 C.F.R. for which exemption is sought, and (2) the operating procedures and safeguards that Petitioner has established which will ensure a level of safety better than or equal to the rules from which exemption is sought.³

² See 49 U.S.C. § 44701(f) (authorizing the grant of exemptions from requirements of regulations prescribed pursuant to Sections 44701(a) and (b) and Sections 44702 – 44716).

³ See 14 C.F.R. § 11.81(e), which requires a petition for exemption to include: "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 you seek exemption."

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A. 14 C.F.R. Part 21, Subpart H — Airworthiness Certificates and 14 C.F.R. §91.203(a)(1)

The FAA has stated that no exemption is needed from this section if a finding is made under the Reform Act that the UAS selected provides an equivalent level of safety when compared to aircraft normally used for the same application. These criteria are met, and therefore no exemption is needed. *See* Grant of Exemption to Astraeus Aerial, Docket No. FAA-2014-0352 at 13-14, 22. If, however, the FAA determines that there are some characteristics of the chosen UAS that fail to meet the requirements of the Reform Act, an exemption is requested.

Equivalent Level of Safety

The UASs identified in Section 2 of the Operations Manual are safe when taking into account their size, weight, speed, and operational capability. As set forth in Section II, *supra*, each of the UASs weighs less than 50 pounds and will be flown at less than 40 miles per hour and completely outside controlled airspace. Additionally, the UASs carry neither pilots nor passengers, carry no explosive materials and or flammable liquid fuels, and operate exclusively within the parameters stated in the Operations Manual.

Operations under this exemption will be closely controlled and monitored by the operator and will be conducted in compliance with local public safety requirements, to provide security for the area of operation. Petitioner will also provide the FAA with advance notice of all operations via NOTAMS and coordination with the local FSDO. In all cases, the UASs operated under the proposed conditions, will be at least as safe as, or safer than conventional rotorcraft operating with an airworthiness certificate without the restrictions and conditions of the proposed UAS operations.

The aircrafts themselves do not need a means to communicate with other aircraft or ATC, because those capabilities will be possessed by the PIC and observer(s) who are not onboard. *See* Grant of Exemption, Docket FAA-2014-0352 at 13. In addition, no "sense and avoid" technology is necessary on the UAS because it will be operated at all times by visual line-of-sight. *Id.*

B. 14 C.F.R. Part 27 Airworthiness Standards: Normal Category Rotorcraft

14 C.F.R. Part 27 sets forth the procedural requirements for airworthiness certification of normal category rotorcraft. To the extent the Petitioner's UAS vehicles would otherwise require certification under Part 27, Petitioner seeks an exemption from Part 27's airworthiness standards for the same reasons identified in the request for exemption from 14 C.F.R. Part 21, Subpart H, *supra*.

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C. 14 C.F.R. §§ 91.9(c), 45.23(b) and 45.27(a): Aircraft Marking and Identification Requirements

Petitioner seeks an exemption from the aircraft marking and identification requirements contained in 14 C.F.R. §§ 91.9(c), 45.23(b) and 45.27(a).

- 14 C.F.R. § 91.9(c) (Civil Aircraft Flight Manual, Marking and Placard requirements), provides that:

No person may operate a U.S.-registered civil aircraft unless that aircraft is identified in accordance with Part 45 of this chapter.

- 14 C.F.R. § 45.23(b) (Markings of the Aircraft), states:

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.

- 14 C.F.R. § 45.27(a) (Rotorcraft) states:

Each operator of a rotorcraft must display on that rotorcraft horizontally on both surfaces of the cabin, fuselage, boom, or tail the marks required by § 45.23.

In a previous Grant of Exemption, the FAA determined that exemption from these requirements was warranted provided that the aircraft "have identification (N-Number) markings in accordance with 14 CFR Part 45, Subpart C if the markings are as large as practicable." FAA Docket No. FAA-2014-0352.

Equivalent Level of Safety

Petitioner will mark all aircraft with their N-Number in a prominent spot on the fuselage with markings that are as large as practicable.

D. 14 C.F.R. § 91.9(b)(2): Civil Aircraft Flight Manual in the Aircraft and 14 C.F.R. § 91.203(a) and (b): Carrying Civil Aircraft Certification and Registration

Pursuant to 14 C.F.R. § 91.9(b)(2):

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

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...

- (2) For which an Airplane or Rotorcraft Flight Manual is required by § 21.5 of this chapter, unless there is available in the aircraft a current approved Airplane or Rotorcraft Flight Manual, approved manual material, markings, and placards, or any combination thereof.

Pursuant to 14 C.F.R. § 91.203(a) and (b):

- (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...
- (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.

Petitioner does not request an exemption from this section but instead notifies the FAA that, in accordance with FAA Office of Chief Counsel's Opinion dated August 8, 2014, the UAS flight manual, registration certificate and other documentation will be kept at the control station with the PIC during flight. The Chief Counsel's Office has held that for all UAS operations, this alternate method constitutes full compliance with the regulations.

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

Petitioner seeks an exemption from 14 C.F.R. § 91.7(a), which requires that a civil aircraft be in airworthy condition to be operated. The FAA has stated that no exemption is required to the extent that the requirements of Part 21 are waived or found inapplicable. Accordingly, Petitioner requests that the requirements for Section 91.7 be treated in accordance with Section V(A), *supra*.

F. 14 C.F.R. § 91.103: Preflight Action

Petitioner seeks an exemption from 14 C.F.R. § 91.103, which requires a PIC to become familiar with specific information before each flight, including information contained in the FAA-approved Flight Manual on board the aircraft. While the PIC will be familiar with all information necessary to safely conduct the flight, an exemption is requested to the extent that an FAA-approved Flight manual is required.

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Equivalent Level of Safety

An equivalent level of safety will be provided by following the Aircraft Operations Manual and flight manual provided by the manufacturer. The PIC will take all required preflight actions, including performing all required checklists and reviewing weather, flight requirements, battery charge, landing and takeoff distance, aircraft performance data, and contingency landing areas - before initiation of flight. The Operations Manual and manufacturer's flight manual will be kept at the ground station with the operator at all times.

G. 14 C.F.R. § 91.109(a): Flight Instruction

Petitioner seeks an exemption from 14 C.F.R. § 91.109(a), which provides that "[n]o 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." UAS vehicles and remotely piloted aircraft, by their design, do not have functional dual controls. Instead, flight control is accomplished through the use of a device that communicates with the aircraft via radio communications.

Equivalent Level of Safety

Given the size and speed of the UAS employed by Petitioner, an equivalent level of safe training can still be performed without dual controls because no pilot or passengers are aboard the UAS, and all persons will be a safe distance away in the event that the UAS experiences any difficulties during flight instruction. In addition, Petitioner will conduct flight training at its R&D test sites, which locations are shown in the Operations Manual. These training flights will be conducted in a sterile area and will otherwise comply with the provisions in the Operations Manual for flights at the R&D facility. Accordingly, Petitioner's proposed method of operation provides superior levels of safety required by the FAA. In addition, all UAS operations will be conducted by an experienced FAA certificated private pilot with a minimum of a Class III medical certificate. All UAS pilots employed by Petitioner have hundreds of incident-free hours piloting UASs vehicles and are proficient in carrying out the duties and responsibilities incorporated in the Operations Manual.

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

Petitioner requests an exemption from the minimum safe altitude requirements required by 14 C.F.R. § 91.119. Section 91.119 prescribes the minimum safe altitudes under which an aircraft may not operate, including 500 feet above the surface and away from any person, vessel, vehicle, or structure in non-congested areas. *See* 14 C.F.R. § 91.119(c). Section 91.119(d) allows for a helicopter to operate at less than those minimum altitudes when it can be operated "without hazard to persons or property on the surface," provided that "each person operating the helicopter complies with any routes or altitudes specifically prescribed for helicopters by the FAA."

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Equivalent Level of Safety

Compared to flight operations with rotorcraft weighing far more than the maximum weights proposed herein, and given the lack of flammable fuel, any risk associated with these operations is far less than those that presently exist with conventional aircraft. An equivalent level of safety will be achieved given the size, weight, and speed of the UAS vehicles, as well as the location where it is operated. In order to avoid any risk to aircraft, flight operations will be restricted to 400' AGL or below. As set forth in the Operation Manual, the UAS vehicles will be operated in a restricted area, away from persons or structures not involved in the operation.

I. 14 C.F.R. § 91.121: Altimeter Settings

Petitioner seeks an exemption from 14 C.F.R. § 91.121, which requires a person operating an aircraft to maintain cruising altitude or flight level by reference to an altimeter that is set to the elevation of the departure airport or barometric pressure. An exemption is required to the extent that the UAS vehicles do not have a barometric altimeter, but rather a GPS altitude read out.

Equivalent Level of Safety

Information relayed in real time to the operator. *See* Grant of Exemption to Astraeus Aerial, Docket No. FAA-2014-0352. As the attached Operations Manual indicates, the chosen UAS vehicles meet these requirements, and a zero altitude initiation point will be obtained prior to flight.

J. 14 C.F.R. § 91.151(a): Fuel Requirements for Flight in VFR Conditions

Petitioner requests an exemption from 14 C.F.R. § 91.151(a)'s fuel requirements for flight in VFR conditions. Section 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.

Here, the technological limitations on UAS battery power means that no meaningful flight operations can be conducted while still maintaining a 30 minute reserve. Petitioner

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proposes that all flights comply with this requirement by mandating that the aircraft with 25% (or less) of battery life remaining be safely landed..

Equivalent Level of Safety

The FAA has stated that an equivalent level of safety is provided if the UAS flight is terminated with at least 25% reserve battery power still available. *See* Grant of Exemption to Astraeus Aerial, Docket No. FAA-2014-0352. The Operations Manual conforms to this limit, providing an equivalent level of safety.

K. 14 C.F.R. § 91.405(a), 91.407(a)(1), 91.409(a)(2); 91.417(a) and (b): Maintenance Inspections

Petitioner seeks an exemption from the maintenance inspection requirements contained in 14 C.F.R. § 91.405(a), 91.407(a)(1), 91.409(a)(2); 91.417(a) and (b). These regulations specify maintenance and inspection standards in reference to 14 C.F.R. Part 43. *See, e.g.*, 14 C.F.R. § 91.405(a) (stating that each owner or operator of an aircraft "[s]hall have the aircraft inspected as prescribed in subpart E of this part and shall between required inspections ...have discrepancies repaired as prescribed in part 43 of this chapter"). An exemption from these regulations is needed because Part 43 and these sections only apply to aircraft with an airworthiness certificate, which the UAS vehicles will not have.

Equivalent Level of Safety

An equivalent level of safety will be achieved because maintenance and inspections will be performed in accordance with the UAS Manufacturer's Manual, as referenced in the Operations Manual. As provided in the Operations Manual, flights will not be conducted unless a flight operations checklist is performed, which includes a check of all of the aircraft's components. The Operations Manual also sets requirements for maintenance log books and record keeping as well as routine and post-flight maintenance. The Manual sets requirements for both annual maintenance and preventative maintenance based on hours of flight. In addition, all UAS vehicles owned and operated by Petitioner will be maintained by FAA certified technicians and FAA Repair Station personnel. The unique capability of Petitioner using only appropriately rated technicians and pilots for UAS operation brings with it a level of proficiency and certainly adds a level of safety.

L. 14 C.F.R. § 61.113: Private Pilot Privileges And Limitations

Petitioner seeks exemption from 14 CFR § 61.113, which restricts private pilot certificate holders from flying aircraft for compensation or hire, and would also require a second class medical certificate. The purpose of Part 61 is to ensure that the skill and competency of any PIC matches the airspace in which the PIC will be operating, as well as requiring certifications if

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the private pilot is carrying passengers or cargo for hire. In this case, while the UAS vehicles will be operated as part of a commercial operation, it carries neither passengers nor cargo. In the Grant of Exemption in FAA Docket No. FAA-2014-0352, the FAA determined that the unique characteristics of UAS operation outside of controlled airspace did not warrant the addition cost and restrictions attendant with requiring a PIC to have a commercial pilot certificate and class II medical certificate.

The restrictions Petitioner has placed on its UAS operations meet or exceed the restrictions similarly imposed on Astraeus Aerial in FAA Docket No. FAA-2014-0352. Petitioner will operate in a sterile area away from persons and property not involved in the operation. It will be flown based on VLOS at 400' AGL or below. A NOTAM will be issued between 48 and 72 hours before the flight is to occur, and the flight will be coordinated with the applicable Flight Standards District Office.

Equivalent Level of Safety

In addition to these flight restrictions, Petitioner will further ensure safe operation by requiring that any PIC be thoroughly versed not only in airspace and communication issues pertaining to all aircraft operators, but also in the unique aspects of UAS flight. Each PIC will also be required to conduct training flights at Petitioner's R&D facilities to obtain flight experience with UAS generally and with the specific models used for commercial operations in particular. Petitioner believes that this system will provide a higher level of competency and proficiency for its PICs. Petitioner's PICs will have at least an FAA Private Pilot license with at least a Class III medical certificate. Furthermore, All Petitioner's PICs will have a minimum of 100 hours in type of UAS used and 25 hours in specific make and model of UAS.

VI. DRUG AND ALCOHOL PROGRAM

Petitioner has policies in place to ensure that no person may act as a PIC, observer, or sensor operator if they are under the influence of alcohol or any drug.

VII. PUBLIC INTEREST

Granting Petitioner's exemption request furthers the public interest. National policy set by Congress favors early integration of UAS into the NAS in controlled, safe working environments such as those proposed in this petition. In addition, the public also has an interest in reducing the hazards and emissions associated with alternate use of helicopters to conduct similar inspection operations. The UAS proposed for the exemptions are very light, with a twenty-four pound (24lb) maximum gross weight. They do not carry any flammable liquid fuel, further reducing the risk from any potential accident.

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Additionally, Petitioner has the knowledge and expertise to safely and effectively survey, photograph and evaluate certain real estate, construction sites and public utility equipment whereby typical larger manned aircraft may be a hindrance to the public, noisy and not accessible. Petitioner will have the capability to effectively dispatch in minutes a UAS that in most cases will go unnoticed by the general public, fall well below the typical noise signature of manned aircraft without the use of traditional petroleum based fuels.

Petitioner also encourages demonstrations and seminars relating to safe and effective UAS operation. Petitioner is willing to donate its time to assist the FAA or any other government or public agency that wishes to educate the general public on the integration of UASs in NAS.

Finally, by coordinating and teaming with federal, state and local governments after a disaster, Petitioner can provide valuable information to first responders and government that can help coordinate the response that may not be obtainable with traditional manned aircraft.

VIII. PRIVACY

All flights will be conducted in accordance with any federal, state or local laws regarding privacy.

IX. FEDERAL REGISTER SUMMARY

Pursuant to 14 C.F.R. Part 11, the following summary is provided for publication in the Federal Register, should it be determined that publication is needed:

Petitioner seeks an exemption from the following rules:

14 CFR Part 21, Subpart H; 14 CFR Part 27; 14 CFR 45.23(b); 14 CFR § 61.113; 14 CFR 91.7(a); 14 CFR 91.9(b)(2); 14 CFR 91.103; 14 CFR 91.109(a); 14 CFR 91.119; 14 CFR 91.121; 14 CFR 91.151(a); 14 CFR 91.203 (a) & (b); 14 CFR 91.405(a); 14 CFR 91.407(a)(1); 14 CFR 91.409(a)(2); 14 CFR 91.417 (a) & (b).

The exemption will enhance safety by reducing risk to the general public and property owners from the substantial hazards associated with performing equivalent work with conventional aircraft and rotorcraft.

X. CONCLUSION

Satisfaction of the criteria provided in Section 333 of the Reform Act of 2012—size, weight, speed, operating capabilities, proximity to airports and populated areas, operation within visual line of sight, and national security - provides more than adequate justification for the grant of the requested exemptions to permit Petitioner to operate the selected UAS vehicles and provide R&D, photography for real estate and construction businesses and public utilities and

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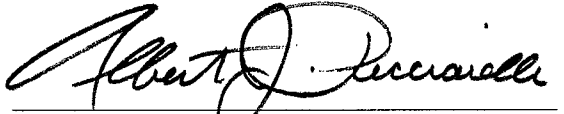
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also to participate in local FAA or Government seminars and demonstrations relating to the safe and effective operation of UASs.

Granting the requested exemption will benefit the public interest as a whole in many ways, including (1) significantly improving safety and reducing risk by alleviating human exposure to danger, and (2) improving the quality of services and decreasing operating costs compared with conventional flight operations.

If you have any questions or require any additional information, please do not hesitate to call.

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Albert J. Pucciarelli, Esq.
Partner

Attachments:

1. Petitioner's General Operations and Safety Manual
2. Pilots Operating Guide and Maintenance Supplements
3. Supplements:
 - A. Spreading Wings S1000+ User Manual V1.0
 - B. Zenmuse Z15-GH4 (HD) User Manual V1.0
 - C. A2 Flight Control System User manual V1.0
 - D. HITEC X4 Four Channel Multi Changer Instruction Manual
 - E. 2.4G Bluetooth Datalink & iPad Ground Station User Guide V1.12

The above are submitted as Confidential Documents under 14 C.F.R. § 11.35(b) and exempt from disclosure under the Freedom of Information Act, 5 U.S.C. § 552 *et seq.*, and any other requirements established by the FAA pursuant to Section 333 of the Reform Act