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

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

August 19, 2015

Exemption No. 12515
Regulatory Docket No. FAA–2015–1445

Mr. Joseph Yasunaga
RPA/UAS Consulting LLC
751 Langly Street
Colorado Springs, CO 80916

Dear Mr. Yasunaga:

This letter is to inform you that we have granted your request for exemption. It transmits our decision, explains its basis, and gives you the conditions and limitations of the exemption, including the date it ends.

By letter dated April 26, 2015, you petitioned the Federal Aviation Administration (FAA) on behalf of RPA/UAS Consulting LLC (hereinafter petitioner or operator) for an exemption. The petitioner requested to operate an unmanned aircraft system (UAS) to conduct photography and videography, emergency services support, search and rescue, emergency services training, UAS operations training[1], and UAS capability demonstrations.

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.

[1] The petitioner requested authority to conduct UAS training. At this time, the FAA is unable to authorize UAS operations for training until a further assessment is completed. When the FAA completes its review, we will proceed accordingly and no further action will be required by the petitioner. However, the petitioner is permitted to train its own pilot in commands and visual observers in accordance with condition no. 14 and the other conditions and limitations in this exemption.

Airworthiness Certification

The UAS proposed by the petitioner are the DJI Phantom 2 vision+, DJI Phantom 3 professional, DJI Inspire 1, DJI S1000, and the ASCTEC Falcon 8.

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[2]. 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.

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

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, RPA/UAS Consulting 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, RPA/UAS Consulting LLC is hereafter referred to as the operator.

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

1. Operations authorized by this grant of exemption are limited to the DJI Phantom 2 vision+, DJI Phantom 3 professional, DJI Inspire 1, DJI S1000, and the ASCTEC Falcon 8 when weighing less than 55 pounds including payload. Proposed operations of any other aircraft will require a new petition or a petition to amend this exemption.

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

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

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

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

6. All operations must utilize a visual observer (VO). The UA must be operated within the visual line of sight (VLOS) of the PIC and VO at all times. The VO may be used to satisfy the VLOS requirement as long as the PIC always maintains VLOS capability. The VO and PIC must be able to communicate verbally at all times; electronic messaging or texting is not permitted during flight operations. The PIC

must be designated before the flight and cannot transfer his or her designation for the duration of the flight. The PIC must ensure that the VO can perform the duties required of the VO.

7. This exemption and all documents needed to operate the UAS and conduct its operations in accordance with the conditions and limitations stated in this grant of exemption, are hereinafter referred to as the operating documents. The operating documents must be accessible during UAS operations and made available to the Administrator upon request. If a discrepancy exists between the conditions and limitations in this exemption and the procedures outlined in the operating documents, the conditions and limitations herein take precedence and must be followed. Otherwise, the operator must follow the procedures as outlined in its operating documents. The operator may update or revise its operating documents. It is the operator's responsibility to track such revisions and present updated and revised documents to the Administrator or any law enforcement official upon request. The operator must also present updated and revised documents if it petitions for extension or amendment to this grant of exemption. If the operator determines that any update or revision would affect the basis upon which the FAA granted this exemption, then the operator must petition for an amendment to its grant of exemption. The FAA's UAS Integration Office (AFS−80) may be contacted if questions arise regarding updates or revisions to the operating documents.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

27. All operations shall be conducted over private or controlled-access property with permission from the property owner/controller or authorized representative.

Permission from property owner/controller or authorized representative will be obtained for each flight to be conducted.

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

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

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

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

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

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

This exemption terminates on August 31, 2017, unless sooner superseded or rescinded.

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

Enclosures

April 26, 2015

U.S. Department of Transportation
Docket Management System
Room W12-140
1200 New Jersey Ave., SE
Washington, DC 20590

Subject: Exemption request under Section 333 of the FAA Reform Act.

Dear Sir/Ma'am:

Pursuant to Section 333 of the FAA Modernization and Reform Act of 2012 RPA/UAS Consulting LLC, the operator of small Unmanned Aircraft Systems (UAS) seeks an exemption from the Federal Aviation Regulations (FARs) 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 RPA/UAS Consulting LLC to operate a UAS to perform aerial data collection.

You'll find that our request is similar to relief previously requested in Grant of Exemption Nos. 11062, 11109, 11112, and 11213. Furthermore, the UAS proposed by RPA/UAS Consulting LLC have been approved in Grant of Exemption Nos. 11398 and 11277.

The requested exemption would permit RPA/UAS Consulting LLC to commercially operate UAS for the following purposes:

- Airborne photography and videography
- Emergency services support
- Search and rescue
- Emergency Services training
- UAS operations training
- UAS capability demonstrations

Furthermore, RPA/UAS Consulting LLC will research, develop, and commercial operate UAS to conduct:

- Agriculture and land surveying
- News gathering and reporting
- Railroad inspections
- Bridge inspections
- Infrastructure inspection
- Tall structure inspections (smokestacks, cell phone towers, windmills, and electrical transmission towers, ect.)

The primary purpose of RPA/UAS Consulting is to assist other industries by providing safe and efficient UAS support. The uses of UAS to perform airborne photography and

videography as well as aerial inspections and surveying have two major benefits. First, small UAS are considerably safer than using manned aircraft in the previously mentioned tasks, and also reduces the fall risk of workers. Second, UAS allows the completion of many tasks at a fraction of the cost using traditional means. Granting this exemption is in the public interest because it will dramatically enhance safety, lower-cost, and improve the efficiency of many industries.

RPA/UAS Consulting LLC will conduct the aforementioned tasks by using the following small sized UAS: DJI Phantom 2 vision+, DJI Phantom 3 professional, DJI Inspire 1, DJI S1000, and the ASCTEC Falcon 8. The listed UAS are very small, all weighing less than 25 pounds, and have advanced navigation systems and automated control features that enhance safety. With the exception of the DJI Phantom 3, which is merely an improvement of the Phantom 2 vision+, all of the UAS there will be operated with this exemption have been previously approved in other Section 333 exemption requests.

The chief pilot and owner of RPA/UAS Consulting, Joseph Yasunaga, is an experienced Commercial Pilot and a FAA Certified Flight Instructor with over 2000 hours of military UAS experience. RPA/UAS Consulting PICs will all possess a minimum of a FAA Private Pilot's License and a current Class III medical. All of RPA/UAS Consulting operations will strictly adhere to FAA regulations with safety being the number one priority. All operations will be conducted via unaided visual line of sight below 400 feet AGL and outside of any controlled airspace unless the controlling agency gives express permission.

RPA/UAS Consulting LLC respectfully submits a grant of exemption is in the public interest because the use of small UAS in lieu of comparatively more expensive and hazardous fixed and rotary wing aircraft or other conventional manned methods of inspection greatly enhances efficiency and achieves a level of safety that is significantly higher. Furthermore, RPA/UAS Consulting will assist other industries in the safe application of UAS and promote the benefits of safe UAS operations. Approval of this exemption would enhance safety and fulfilled the Secretary of Transportation's responsibility under the section 333(c) of the FAA Modernization and Reform Act of 2012 to “establish requirements for the safe operation of such aircraft systems in the national airspace system.”

Name and address of the applicant:

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JUSTIFICTION UNDER SECTION 333

According to the *FAA's Public Guidance for Petitions for Exemption Filed under Section 333* "Section 333 grants the Secretary of Transportation the authority to determine if an unmanned aircraft system, as a result of its size, weight, speed, operational capability, proximity to airports and populated areas, and operation within visual line of sight does not create a hazard to users of the national airspace system or the public or pose a threat to national security". RPA/UAS Consulting LLC submits that the small size and weight of the purposed UAS coupled with the fact that the operations will be conducted at low altitudes, slow airspeed, and within visual line of sight of the operator; our operations pose no potential hazard to the national airspace system, general public, or present any threat to national security.

Airworthiness of the UAS

The Federal Aviation Act (49 U.S.C.§44701 (f)) and Section 333 of the Reform Act both authorize the FAA to exempt aircraft from the requirement for an airworthiness certificate, upon consideration of the size, weight, speed, operational capability of the particular UAS. RPA/UAS Consulting LLC purposes using DJI Phantom 2 vision+, DJI Phantom 3 professional, DJI Inspire 1, DJI S1000, and the ASCTEC Falcon 8. The proposed systems have the inherent advantage of being small in size and battery-operated therefore do not carry flammable fuel, this significantly reduces any potential damage in the event of a mishap. RPA/UAS Consulting LLC will operate the proposed UAS below 400 feet AGL, at speeds less than that recommended by the manufacturer, and at all times less than 50 knots. Operations will only be conducted in during daylight hours, in uncontrolled airspace, unless specific permission is granted by the controlling agency, and within visual line of sight of the operator.

With the exception of the DJI Phantom 3, which is merely an improvement of the DJI Phantom 2, all of the UAS that will be operated with this exemption have been previously approved in other Section 333 exemption requests. The DJI Phantom 2 vision+, DJI Inspire 1, DJI S1000 were approved for use in Exemption No. 11398. The ASCTEC Falcon 8 was approved in Exemption Number 11277. An analysis of these criteria demonstrates that the purposed UAS operated without an airworthiness certificate, in the restricted environment and under the conditions proposed will be at least as safe, or safer, than a conventional aircraft (fixed or helicopter) operating with an airworthiness certificate without the restrictions and conditions proposed.

Operation of the UAS

RPA/UAS Consulting LLC will ensure that the exemption does not adversely affect safety and will operate at a level of safety at least equal to existing rules by operating with the following limitations and conditions:

- All operations will strictly adhere to manufactures owners, operators and maintenance manual.
- All operations will occur in class G airspace, unless specifically authorized by the controlling authority.

- All operations will be conducted during daylight hours.
- All operations will occur below 400 feet AGL.
- All operations will be conducted and visual meteorological conditions with visibility of at least three nautical miles.
- All operations will be conducted with at least 500 feet below clouds and with a horizontal separation of at least 2000 feet.
- At no time will the operator allow the aircraft within 500 feet of nonparticipating person, structure, or vehicle.
- Preflight operations will be conducted in accordance with the manufacturer's recommendation and preflight checklist.
- All maintenance will be conducted in accordance with manufacturers recommendations and documented in the aircraft logbook

PIC Requirements

RPA/UAS Consulting LLC respectfully submits that the operator requirements should take into account the advanced internal navigation and autopilot systems of the proposed UAS. The DJI and ASCTEC systems both have a high degree of control and are extremely stable even in high wind environments. Both companies incorporate various built-in capabilities that limit the potential for operations outside of the aircraft capability.

The pilot in charge (PIC) is solely responsible for the safe operation of the UAS. RPA/UAS Consulting LLC will only use PIC's who possess and FAA commercial or private pilot's license and a class III medical. RPA/UAS Consulting LLC will also ensure that all PICs comply with manufacturer training requirements, and have been deemed safe and proficient by the chief pilot.

The regulations from which the exemption is requested are as follows:

14 C.F.R. Part 21;
14 C.F.R. 45.23(b);
14 C.F.R. 61.113(a) & (b);
14 C.F.R. 61.133(a);
14 C.F.R. 91.7(b);
14 C.F.R. 91.9(b)(2);
14 C.F.R. 91.109(a);
14 C.F.R. 91.119;
14 C.F.R. 91.121;
14 C.F.R. 91.151(a);
14 C.F.R. 91.203(a) & (b);
14 C.F.R. 91.405(a);
14 C.F.R. 91.407(a)(1);
14 C.F.R. 91.409(a)(2);
14 C.F.R. 91.417(a) & (b).

14 C.F.R. Part 21, Subpart H: Airworthiness Certificates 14 CFR § 91.203(a)(1)

Subpart H, Airworthiness Certificates, establishes the procedural requirements for the issuance of airworthiness certificates as required by FAR §91.203 (a) (1). Given the size and limited operating area associated with the aircraft to be utilized by RPA/UAS Consulting LLC, an exemption from Part 21 Subpart H meets the requirements of an equivalent level of safety under Part 11 and Section 333 of the Reform Act. The Federal Aviation Act (49 U.S.C.§44701 (f)) and Section 333 of the Reform Act both authorize the FAA to exempt aircraft from the requirement for an airworthiness certificate, upon consideration of the size, weight, speed, operational capability, and proximity to airports and populated areas of the particular UAS. Our small UAS's will be operated at low speed in a controlled environment, away from airports and any densely populated area. An analysis of these criteria demonstrates that the UAS's operated without an airworthiness certificate, in the restricted environment and under the conditions proposed will be at least as safe, or safer, than a conventional aircraft (fixed wing or helicopter) operating with an airworthiness certificate without the restrictions and conditions proposed.

The UAS to be operated is less than 25 lbs. fully loaded, carries neither a pilot nor passenger, carries no flammable liquid fuels, and operates exclusively within a secured area. Like other civil aircraft, operations under this exemption will be tightly controlled and monitored by the PIC. If required, the FAA and general public will have advance notice of all operations.

These safety enhancements, which already apply to civil aircraft operated in connection with private property, industrial sites, railroad yards and the like provide a greater degree of safety to the public and property owners than conventional operations conducted with airworthiness certificates issued under 14 C.F.R. Part 21, Subpart H. Lastly, application of these same criteria demonstrates that there is no credible threat to national security and the NAS posed by the UAS, due to its size, speed of operation, location of operation, lack flammable liquid fuels, and limited ability to carry an external load.

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

This regulation requires certain experimental, provisionally certificated aircraft, or light-sport category aircraft to be marked with letters between 2 inches and 6 inches high "limited," "restricted," "light-sport," "experimental," or "provisional," near each entrance to a cabin, cockpit, or pilot station.

Even though the UAS will have no airworthiness certificate, an exemption may be needed as the UAS will have no entrance to the cabin, cockpit or pilot station on which the word "Experimental" can be placed. Given the size of the UAS, two-inch lettering will be impossible. The word "Experimental" will be placed on the fuselage in compliance with §45.29 (f).

The equivalent level of safety will be provided by having the UAS marked on its fuselage as required by §45.29 (f) where the pilot, observer and others working with the UAS will see the identification of the UAS as "Experimental." The FAA has issued the following exemptions to this regulation: Exemptions Nos. 10700, 8738, 10167 and 10167A.

14 C.F.R. § 61.113(a) & (b); 61.133(a): Private Pilot Privileges and Limitations; Pilot in Command; Commercial Pilot Privileges and Limitations.

Part 61.113 (a) states that no person who holds a private pilot certificate may act as pilot in command of an aircraft that is carrying passengers or property for compensation or hire; nor may that person, for compensation or hire, act as pilot in command or an aircraft. Part 61.113 (b) states that a private pilot may, for compensation or hire, act as pilot in command of an aircraft in connection with any business or employment if: (1) The flight is only incidental to that business or employment; and (2) The aircraft does not carry passengers or property for compensation or hire. Section 61.133(a) requires an individual with a commercial pilot's license to be pilot in command of an aircraft for compensation or hire.

RPA/UAS Consulting LLC proposes that all operations require that the PIC must either hold an either a Commercial or Private Pilot Certificate issued by the FAA. Since there are currently no means available for the pilot of a UAS to gain the experience in an equivalent category and class in order to apply for a commercial UAS pilot's license, using pilots qualified under other categories and classes meets or exceeds the present level of safety provided under 14 C.F.R. § 61.113(a) & (b). Given the unique nature of commercial UAS operations we do not believe that it rises to the level of requiring a commercial pilot to operate the aircraft under§ 61.133(a).

14 C.F.R. § 91.7(a): Civil aircraft airworthiness.

This regulation requires that no person may operate a civil aircraft unless it is in airworthy condition. Should the exemption be granted allowing commercial operation of the UAS without an airworthiness certificate, no standard will exist for airworthiness of the UAS. Given the size of the aircraft and the requirements published by the manufacture for maintenance and the use of safety checklists prior to each flight, an equivalent level of safety will be provided.

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

The UAS, given its size and configuration has no ability or place to carry such a flight manual on the aircraft, not only because there is no pilot on board, but because there is no room or capacity to carry such an item on the aircraft.

The equivalent level of safety will be maintained by keeping the flight manual at the ground control point where the pilot flying the UAS will have immediate access to it. The FAA has issued the following exemptions to this regulation: Exemption Nos. 8607, 8737, 8738, 9299, 9299A, 9565, 9565B, 10167, 10167A, 10602, 32827, and 10700.

14 C.F.R. 91.103: Preflight Action

This regulation requires each pilot in command take certain actions before flight to ensure the safety of flight. An exemption is needed from this requirement as the pilot will take separate preflight actions, including checking for weather conditions, checking flight battery requirements, checking takeoff and landing distances, and all other actions in the manufactures preflight checklist. These actions will provide an equivalent level of safety.

14 C.F.R. § 91.109(a) & 91.319(a)(1): Flight Instruction

These regulations provide that 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.

By design, UASs and remotely piloted aircraft do not have fully functional dual controls. Flight control is accomplished through the use of a control station that communicates with the aircraft via radio communications. The FAA has previously approved exemptions for aircraft without fully functional dual controls. The equivalent level of safety provided by the fact that neither a pilot nor passengers will be carried in the aircraft, the ability to control the UAS via radio signals from the controller, and by the size and speed of the aircraft.

14 CFR § 91.119: Minimum Safe Altitudes

Section 91.119 establishes safe altitudes for operation of civil aircraft. Specifically, 91.119(c) limits aircraft flying over areas other than congested areas to 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.

The equivalent level of safety will be achieved given the size, weight, speed of the UAS as well as the location where it is operated. No flight will be taken without the permission of the property owner. Compared to flight operations with aircraft weighting far more than the maximum 55 lbs. proposed herein and carrying flammable fuel, any risk associated with our operations is far less than those presently presented with helicopters and other conventional aircraft operating at or below 500 AGL. In addition, the low-altitude operations of the UAS will ensure separation between these UAS operations and the operations of conventional aircraft.

14 C.F.R § 91.121 Altimeter Settings

This regulation requires each person operating an aircraft to maintain cruising altitude by reference to an altimeter that is set "...to the elevation of the departure airport or an appropriate altimeter setting available before departure." As the UAS does not have a barometric altimeter, but instead a GPS altitude read out, an exemption is needed. An equivalent level of safety will be achieved by the operator confirming the altitude of the launch site shown on the GPS altitude indicator before flight.

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

This regulation prohibits an individual from beginning “a flight in an airplane under VFR conditions unless (considering wind and forecast weather conditions) there is enough fuel to fly to the first point of intended landing and, assuming normal cruising speed – (1) During the day, to fly after that for at least 30 minutes.”

An equivalent level of safety can be achieved by limiting flights to what the manufacturer recommends, or enough battery reserve to ensure that the UAS lands at the ground station with at least 25% of battery power (as determined by the onboard monitoring system and the pilot), whichever happens first. This restriction would be more than adequate to return the UAS to its planned landing zone from anywhere in its limited operating area. Similar exemptions have been granted to other operations, including Exemptions 2689F, 5745, 10673, and 10808.

14 C.F.R. § 91.203 (a) & (b): Carrying Civil Aircraft Certification and Registration

This regulation requires: "no person may operate a civil aircraft unless it has [. . .] 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".

An equivalent level of safety will be achieved by keeping these documents at the ground control point where the pilot flying the UAS will have immediate access to them. The FAA has issued numerous exemptions to this regulation. A representative sample of other exceptions includes Exemption Nos. 9565, 9665, 9789, 9789A, 9797, 9797A, 9816A, and 10700.

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

Section 91.405(a) requires that an aircraft operator or owner "shall have that aircraft inspected as prescribed in subpart E of this part and shall between required inspections, except as provided in paragraph (c) of this section, have discrepancies repaired as prescribed in part 43 of this chapter . . . ." Section 91.407 similarly makes reference to requirements in Part 43; Section 91.409(a)(2) requires an annual inspection for the issuance of an air worthiness certificate. Section 91.417(a) requires the owner or operator to keep records showing certain maintenance work that has been accomplished by certificated mechanics, under Part 43, or licensed pilots and records of approval of the aircraft for return to service.

Given that these section and Part 43 apply only to aircraft with an airworthiness certificate, these sections will not apply to RPA/UAS Consulting LLC UAS. An equivalent level of safety, given the small size and unique characteristics of the aircraft, will be maintained by the operator accomplishing and documenting all required maintenance specified by the manufacturer.