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

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

May 22, 2015

Exemption No. 11684
Regulatory Docket No. FAA–2015–0694

Mr. Raffael Aieta
Mr. Dylan Ohman
Aerial Photography and Survey LLC
435 East 53rd Avenue
Eugene, OR 97405

Dear Messrs. Aieta and Ohman:

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 March 16, 2015, you petitioned the Federal Aviation Administration (FAA) on behalf of Aerial Photography and Survey LLC (hereinafter petitioner or operator) for an exemption. The petitioner requested to operate an unmanned aircraft system (UAS) to conduct operations for the agriculture, aerial photography, construction, inspection, surveying, and wildlife preservation industries.

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 3D Robotics Iris+.

The petitioner requested relief from 14 CFR part 21, *Certification procedures for products and parts, Subpart H—Airworthiness Certificates*. In accordance with the statutory criteria

provided in Section 333 of Public Law 112−95 in reference to 49 U.S.C. § 44704, and in consideration of the size, weight, speed, and limited operating area associated with the aircraft and its operation, the Secretary of Transportation has determined that this aircraft meets the conditions of Section 333. Therefore, the FAA finds that the requested relief from 14 CFR part 21, *Certification procedures for products and parts, Subpart H—Airworthiness Certificates*, and any associated noise certification and testing requirements of part 36, is not necessary.

The Basis for Our Decision

You have requested to use a UAS for aerial data collection. The FAA has issued grants of exemption in circumstances similar in all material respects to those presented in your petition. In Grants of Exemption Nos. 11062 to Astraeus Aerial (*see* Docket No. FAA−2014−0352), 11109 to Clayco, Inc. (*see* Docket No. FAA−2014−0507), 11112 to VDOS Global, LLC (*see* Docket No. FAA−2014−0382), and 11213 to Aeryon Labs, Inc. (*see* Docket No. FAA−2014−0642), the FAA found that the enhanced safety achieved using an unmanned aircraft (UA) with the specifications described by the petitioner and carrying no passengers or crew, rather than a manned aircraft of significantly greater proportions, carrying crew in addition to flammable fuel, gives the FAA good cause to find that the UAS operation enabled by this exemption is in the public interest.

Having reviewed your reasons for requesting an exemption, I find that—

- They are similar in all material respects to relief previously requested in Grant of Exemption Nos. 11062, 11109, 11112, and 11213;
- The reasons stated by the FAA for granting Exemption Nos. 11062, 11109, 11112, and 11213 also apply to the situation you present; and
- A grant of exemption is in the public interest.

Our Decision

In consideration of the foregoing, I find that a grant of exemption is in the public interest. Therefore, pursuant to the authority contained in 49 U.S.C. 106(f), 40113, and 44701, delegated to me by the Administrator, Aerial Photography and Survey 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, Aerial Photography and Survey 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 3D Robotics Iris+ when weighing less than 55 pounds including payload. Proposed operations of any other aircraft will require a new petition or a petition to amend this exemption.

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

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

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

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

6. All operations must utilize a visual observer (VO). The UA must be operated within the visual line of sight (VLOS) of the PIC and VO at all times. The VO may be used to satisfy the VLOS requirement as long as the PIC always maintains VLOS capability. The VO and PIC must be able to communicate verbally at all times; electronic messaging or texting is not permitted during flight operations. The PIC must be designated before the flight and cannot transfer his or her designation for the duration of the flight. The PIC must ensure that the VO can perform the duties required of the VO.

7. This exemption and all documents needed to operate the UAS and conduct its operations in accordance with the conditions and limitations stated in this grant of exemption, are hereinafter referred to as the operating documents. The operating documents must be accessible during UAS operations and made available to the Administrator upon request. If a discrepancy exists between the conditions and limitations in this exemption and the procedures outlined in the operating documents, the conditions and limitations herein take precedence and must be followed. Otherwise, the operator must follow the procedures as outlined in its operating documents. The operator may update or revise its operating documents. It is the operator's responsibility to track such revisions and present updated and revised

documents to the Administrator or any law enforcement official upon request. The operator must also present updated and revised documents if it petitions for extension or amendment to this grant of exemption. If the operator determines that any update or revision would affect the basis upon which the FAA granted this exemption, then the operator must petition for an amendment to its grant of exemption. The FAA's UAS Integration Office (AFS−80) may be contacted if questions arise regarding updates or revisions to the operating documents.

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

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

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

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

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

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

14. The operator may not permit any PIC to operate unless the PIC demonstrates the ability to safely operate the UAS in a manner consistent with how the UAS will be operated under this exemption, including evasive and emergency maneuvers and maintaining appropriate distances from persons, vessels, vehicles and structures. PIC qualification flight hours and currency must be logged in a manner consistent with

14 CFR § 61.51(b). Flights for the purposes of training the operator's PICs and VOs (training, proficiency, and experience-building) and determining the PIC's ability to safely operate the UAS in a manner consistent with how the UAS will be operated under this exemption are permitted under the terms of this exemption. However, training operations may only be conducted during dedicated training sessions. During training, proficiency, and experience-building flights, all persons not essential for flight operations are considered nonparticipants, and the PIC must operate the UA with appropriate distance from nonparticipants in accordance with 14 CFR § 91.119.

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

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

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

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

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

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

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

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

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

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

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

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

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

27. All operations shall be conducted over private or controlled-access property with permission from the property owner/controller or authorized representative. Permission from property owner/controller or authorized representative will be obtained for each flight to be conducted.

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

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

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

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

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

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

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

Sincerely,

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

Enclosures

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March 16, 2015

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

Re: Submission of Request for Authorization to Conduct Unmanned Aircraft Systems Operations Allowed by Section 333 of the FAA Modernization and Reform Act of 2012 Through the Exemption Process Identified Under 14 C.F.R. Section 11.81

Dear Sir/Madam,

Pursuant to Section 333 of PL 112-95 commonly known as the "FAA Modernization and Reform Act of 2012" or "The Reform Act", Aerial Photography and Survey llc.(d/b/a APS), hereby applies for authorization to conduct commercial unmanned aerial systems (UAS) operations for the agriculture, aerial photography, construction, inspection, surveying, and wildlife preservation industries, within the airspace of the state of Oregon; within Class G and occasionally E airspace, along with additional restrictions identified herein.

Contained within is detailed information on why the approval of this request is in the "...public's interest..." and how the approval will "...provide a level of safety at least equal to that provided by the rule..." APS, seeks exemption from. APS looks forward to working closely with the FAA to "...safely accelerate the integration of civil unmanned aircraft systems into the national airspace system..." as directed by Congress.

Thank you for your time and consideration in this matter and please feel free to contact us with additional information or requests.

Raffael Aieta
Owner / Operator
APS

Dylan Ohman
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I. Company

APS, was founded in 2015 by two friends in a joint effort to create unique business opportunities by utilizing the new sUAS technology. Both partners have a lifelong love of anything that flies and strong backgrounds flying high performance R/C aircraft. This fact mixed with the real world experience of filming and editing action sports such as snowboarding and motocross led the partners to the conclusion that starting a company in the sUAS market could combine our available skills to provide us the opportunity to build a business that would not only be viable but would also provide us a chance to do what we love. APS owner/operator Raffael Aieta also attended Lane Community College flight school for two years and logged ~140 hours in small Cessna's(log book available upon request). APS will at all times be on the lookout for public education opportunities and looks forward to working with the FAA to safely integrate sUAS into the national airspace system. With our combined experience and strong background in flight along with a commitment to safety, APS would make an excellent addition to the list of sUAS companies with an exemption and will work hard to form public opinion of sUAS companies as professional aviators with the safety of the public number one on their list of priorities.

II. Training & Operations

Section 333 of "The Reform Act" states:

"...the Secretary of Transportation shall determine if certain unmanned aircraft systems may operate safely in the national airspace system...In making the determination under subsection (a), the Secretary shall determine, at a minimum— (1) which types of unmanned aircraft systems, if any, as a result of their size, weight, speed, operational capability, proximity to airports and populated areas, and operation within visual line of sight do not create a hazard to users of the national airspace system or the public or pose a threat to national security..."

APS will utilize the Iris+ air vehicle(s) to conduct operations for the agriculture, aerial photography, construction, inspection, surveying and wildlife preservation industries. The Iris+ meets the requirements for determination for exemption in the fact it has a maximum weight of 1682 grams, maximum speeds of 35 knots and flies for less than seventeen minutes (battery limited). Operating within visual line of sight (VLOS) and remaining below 400 ft AGL are standard operating procedures for APS and will remain so until further advances in safety of flight are introduced to the market and regulated by the FAA. As described below, all operations will be confined to those areas no closer than one statue mile of any airfield and the proper authorities will be notified with any operations within five statue miles.

The Aircraft: Iris+ UAS

Design: The Iris+ UAS is built from a variety of durable, lightweight and modular components that aid in its capability to be on mission in a variety of conditions. As well, the modularity of construction allows for easy exchange of structural, propulsion or sensor components – in the field.
~As defined by 3DR

Aircraft Performance/Specifications:

- Aircraft Composition: polymers/plastic
- Flight Controls: o Primary: GPS Guided Autopilot (Ground Control Station)
  o Backup: Standard Flight Controls (RC Transmitter)

- Power Supply: Electric Motor /5100 Mah battery pack
- Speed knots: 35
- Empty Weight: 1282g
- Max Payload: 400g/.8lbs
- Launch (Take Off):Gps assisted or manually
- Recovery (Landing):Gps assisted or manually

The sUAV System will be operated in the field with both a OIC and a VO in accordance with FAA Policy N 8900.227 Section 14 "Operational Requirements for UAS" and with the following Restrictions:

(a) No flight will be made with a UA Gross weight exceeding 55 pounds;

(b) All operations must occur in FAA Class G airspace at no more than 400 ft AGL, at an airspeed of no more than 25 knots and no further than 3/4 NM from the OIC;

(c) All operations must utilize a visual observer (VO). The VO and OIC must be able to communicate by voice at all times during a flight operation;

(d) Operations will be restricted to flights over private property with the permission of the property owner;

(e) The OIC must have accumulated and logged, in a manner consistent with 14 CFR § 61.51 (b), a minimum of 100 flight cycles and 25 hours of total time as a UA rotorcraft pilot and at least ten hours logged as a UA pilot with a similar UA type;

(f) All required permits will be obtained from state and local government prior to operation;

(g) The sUAV System will not be operated over densely populated areas;

(h) The sUAV System will not be operated at air shows;

(i) The sUAV System will not be operated over any open-air assembly of people;

(j) The sUAV System will not be operated over heavily trafficked roads;

(k) The sUAV System will not be operated within 5 NM of an airport or heliport without consent from appropriate local tower authorities and never within 1 NM.

(l) The sUAV System will not be operated over properties smaller than two acres in size;

(m) Operations will be restricted to day only and weather conditions equivalent to VFR;

(n) The OIC will brief the VO and property owner about the operation and risk before the first flight at each new location;

(o) No flight may be made without a Pre-Flight Inspection by the OIC before each operation to ascertain that the UA is in a condition safe for flight.

The OIC and VO will meet the requirements outlined in FAA Policy N 8900.227 Section 16 personnel Qualifications. Additionally, the OIC and VO will perform maintenance on the system and will complete a course of maintenance instruction as part of their initial training.
We submit that the combination of the UA's light weight, flight performance and ability, fully qualified flight crew and strict operation under the guidelines established in 8900.227, and under all of the Restrictions (a) through (o) listed above, the FAA can have full confidence that the operation will have an equivalent or greater level of safety than manned aircraft performing the same mission.

III. Regulations – Exemption Requested
Pursuant to 14 C.F.R. § 11.81(e), APS seeks exemption from the below mentioned regulations and provides reason as to why the exemption should be approved based on the level of safety at least equal to that of which the rules require.

• 14 C.F.R. Part 21 Subpart H – Airworthiness Certificates ➢ Establishes: *The procedural requirements for the issuance of airworthiness certificates as required by 14 C.F.R. § 91.203(a)(1)*

Given the small size of the UAS, the limited operating areas and meticulous procedures defined within the training and operations section (re-iterated below), 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" with consideration "of the size, weight, speed, operational capability, and proximity to airports and populated areas of the particular UAS."

- sUAS Size: Height 100mm /Motor to Motor 550mm
- sUAS Weight: 1682g fully loaded
- sUAS Speed (knots): 35
- sUAS Capes: 16 minute battery limited flight time (No fuel on board)
- No operations within one statute mile; Prior notice given to ATC tower/Airport Operator w/in five statute miles
- Minimum distance of 250 ft from persons, structures, roads and vehicles not being photographed.
- Operations will be contained within one square mile and all dangers identified and mitigated before the flight plan is finalized into the GPS flight planning program.

NOTE: The FAA has recently set precedence to this regulation within like given parameters and an exemption should be approved on this basis. See exemption approvals for Astraeus Aerial, Aerial MOB, HeliVideo Productions, RC Pro Productions, Snaproll Media and Pictorvision.

□ 14 C.F.R. § 45.23(b) – Aircraft Marking and Identification Requirements

➢ **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.
APS will ensure compliance with § 45.29(f) to meet the intent of the regulation by placing the word "experimental" on the fuselage of the air vehicle(s).

NOTE: The FAA has set precedence to this regulation within like given parameters and an exemption should be approved on this basis along with previous exemptions: Nos. 10700, 10167 and 10167A. Also, see most recent

exemption approvals for Astraeus Aerial, Aerial MOB, HeliVideo Productions, RC Pro Productions, Snaproll Media and Pictorvision for further justification of approval.

• 14 C.F.R. 61.113 (a)(b) and 61.133(a)(1)(ii) – Private and Commercial Pilot Privilege and Limitations

➢ **14 C.F.R. § 61.113:** *(a) Except as provided in paragraphs (b) through (g) of this section, no person who holds a private pilot certificate may act as pilot in command of an aircraft that is carrying passengers or property for compensation or hire; nor may that person, for compensation or hire, act as pilot in command of an aircraft. (b) A private pilot may, for compensation or hire, act as pilot in command of an aircraft in connection with any business or employment if:*

➢ **14 C.F.R. § 61.133:** *(a) Privileges – (1) General. A person who holds a commercial pilot certificate may act as pilot in command of an aircraft – (ii) For compensation or hire, provided the person is qualified in accordance with this part and with the applicable parts of this chapter that apply to the operation.*

Currently, there are no applicable areas identified for sUAS in either the private or commercial sector and therefore an exemption is required to conduct commercial operations. As flight operations will be conducted in a restricted environment as described in the operations section, these strict guidelines will achieve an equivalent level of safety for each individual flight especially when compared to commercial flights identified in Part 61 when originally developed. In addition, with the Iris+ primary control system utilizing GPS waypoints for guidance and control, APS flight operations will be conducted by qualified Iris+ operators with ground school certification and a class III medical.

NOTE: Operators may or may not hold a private pilot license.

☐ 14 C.F.R. 91.7(a) – Civil Aircraft Airworthiness ➢ States: *No person may operate a civil aircraft unless it is in an airworthy condition.*

Currently there is no airworthiness certificate for the iris+ UAS, however, the manufacturer is in the process of obtaining said certificate. In the interim, daily pre and post flight inspections will be accomplished in accordance with manufactures maintenance manual(s) and guidance. During flight, the OIC will adhere to § 91.7(b) and abort air operations immediately upon identification of an in-flight emergency. Any maintenance performed will be conducted by certified maintenance technicians and/or the manufacturer themselves. By applying the prescribed operations, inspection and maintenance procedures within the operations section, an equivalent level of safety will be achieved.

NOTE: The FAA has set precedent by previously issuing exemptions for § 91.7(a): Exemption Nos. 8607, 8737, 8738, 9299, 9299A, 9565, 9565B, 10167, 10167A, 10602, 32827, and 10700. Also, see most recent exemption approvals for Astraeus Aerial, Aerial MOB, HeliVideo Productions, RC Pro Productions, Snaproll Media and Pictorvision for further justification of approval.

• 14 C.F.R. 91.103 – Preflight Action ➢ States: Each pilot in command shall, before beginning a flight, become familiar with all available information concerning that flight. This information must include- (paragraphs a, b, 1 and 2)

A pre-flight mission brief must be attended by all crew members. This "PMB" will contain weather and all flight information including emergency and abort procedures. A signature will be required by all crew members indicating they have received the PMB and have read any NOTAMs or other procedural updates which may have impact to standard operating procedures. In addition, the OIC

will verify air vehicle is ready for flight by coordinating with the maintenance technician during pre-flight inspection.
The exemption requested for this section is specifically addressed toward the requirements which do not apply to sUAS operations such as runways and air traffic control integration.

NOTE: As previously stated, air traffic control and airport operator will be notified prior to any operations being executed within five statute miles

NOTE: The FAA has recently set precedence to this regulation within like given parameters and an exemption should be approved on this basis. See exemption approvals for Astraeus Aerial, Aerial MOB, HeliVideo Productions, RC Pro Productions, Snaproll Media and Pictorvision.

• **14 C.F.R. 91.109(a) – Flight Instruction ➢** **States:** *No person may operate a civil aircraft (except a manned free balloon) that is being used for flight instruction unless that aircraft has fully functioning dual controls.*

The majority of sUAS by design are developed with single operational control through the use of pre-determined GPS enabled waypoints programmed before or during flight in addition to the use of a single hand held transmitter or control station controlled by the OIC. The design does not allow for dual controls during flight training and therefore the exemption is requested to qualify/certify operators as required by the manufacturer along with specific operations training and procedures identified above within section II.
An equivalent level of safety will be ensured during training operations by utilizing the same flight planning process for normal operations. In the flight planning document, all ground hazards will be identified and mitigation techniques will be enacted to ensure flights stay outside of 250 ft of any improved roads, vehicles, persons or structures. All training operations will be conducted within a confined space on private land in-which permission has been obtained by land owner prior to the execution of training.

NOTE: The FAA has set precedent by previously issuing exemptions for § 91.109(a): Exemption Nos. 5778K and 9862A. Also, see most recent exemption approvals for Astraeus Aerial, Aerial MOB, HeliVideo Productions, RC Pro Productions, Snaproll Media and Pictorvision for further justification of approval.

• **14 C.F.R. 91.119 (c) – Minimum Safe Altitudes ➢** **States:** *Except when necessary for takeoff or landing, no person may operate an aircraft below the following altitudes: (c) Over other than congested areas. An altitude of 500 feet above the surface, except over open water or sparsely populated areas. In those cases, the aircraft may not be operated closer than 500 feet to any person, vessel, vehicle, or structure.*

All APS operations will be conducted at 400 ft AGL or below in uncontrolled Class G and occasionally E airspace. As sUAS are inherently safer than traditional aircraft due to their small size, light weight, battery operated vice fuel and no human on-board; APS will not operate within 250 ft to any improved roads, vehicles persons or structures (other than those being inspected as part of the flight operation). In addition, objects/hazards will be identified and geo-located prior to flight to be utilized within the flight planning stages to ensure this objective is met.

• **14 C.F.R. 91.121 – Altimeter Settings ➢** **States:** *Each person operating an aircraft shall maintain the cruising altitude or flight level of that aircraft, as the case may be, by reference to an altimeter that is set, when operating...*

sUAS are equipped with Global Positioning System (GPS) which provide altitude and geo-location data to the operator vice utilizing an altimeter. Due to this fact, an exemption is required for this system to be utilized in flight. GPS are precise within a few feet and therefore meet a safety level equal to if not higher than regulatory guidance.

As described in the emergency procedures section; in the event the air vehicle losses GPS signal, automated landing will immediately commence. The flight plan is built in such a way that hazards are identified prior to launch and an immediate landing within the flight plan will ensure all hazards are avoided.

NOTE: The FAA has recently set precedence to this regulation within like given parameters and an exemption should be approved on this basis. See exemption approvals for Astraeus Aerial, Aerial MOB, HeliVideo Productions, RC Pro Productions, Snaproll Media and Pictorvision.

• 14 C.F.R. 91.151(a) – Fuel Requirements for Flight in VFR Conditions ➢ States: *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;*

This regulation is written based on the capabilities of a traditional aircraft which have flight times of several hours or greater; therefore, with the majority of sUAS which have flight times of only an hour or less, this regulation would effectively deny the ability of the air vehicle to operate. Using a Cessna 182 as an example, approximately 8% remaining fuel is required to meet the 30 minute flight time directed by this regulation. To meet the intent, APS, will operate its air vehicles to no less than 10% remaining battery power to ensure safe landing and retrieval of the air vehicle. This 10% buffer is greater than the Cessna 182 and the ability to quickly and safely land sUAS in non-traditional environments ensures at least an equal level of safety.

NOTE: The FAA has set precedent by previously issuing exemptions for § 91.151(a): Exemption Nos. 10673, 2689F, 5745, 10673 and 10808. Also, see most recent exemption approvals for Astraeus Aerial, Aerial MOB, HeliVideo Productions, RC Pro Productions, Snaproll Media and Pictorvision for further justification of approval.

• 14 C.F.R. 91.405(a), 91.407(a)(1), 91.409(a)(2) and 91.417(a) & (b) – Maintenance Inspections

➢ **91.405(a) States:** *Each owner or operator of an aircraft—(a) Shall have that aircraft inspected as prescribed in subpart E of this part and shall between required inspections, except as provided in paragraph (c) of this section, have discrepancies repaired as prescribed in part 43 of this chapter*

➢ **91.407(a)(1) States:** *(a) No person may operate any aircraft that has undergone maintenance, preventive maintenance, rebuilding, or alteration unless—(1) It has been approved for return to service by a person authorized under § 43.7 of this chapter*

➢ **91.409(a)(2) States:** *(a) Except as provided in paragraph (c) of this section, no person may operate an aircraft unless, within the preceding 12 calendar months, it has had—(2) An inspection for the issuance of an airworthiness certificate in accordance with part 21 of this chapter. No inspection performed under paragraph (b) of this section may be substituted for any inspection required by this paragraph unless it is performed by a person authorized to perform annual inspections and is entered as an "annual" inspection in the required maintenance records.*

➢ **91.417(a) & (b) States:** *(a) Except for work performed in accordance with §§ 91.411 and 91.413, each registered owner or operator shall keep the following records for the periods specified in paragraph (b) of this*

section: (paragraphs 1 (i – iii), 2 (i – vi)); (b) The owner or operator shall retain the following records for the periods prescribed: (paragraphs 1 – 3)

Due to the fact the Iris+ UAS at present does not have an airworthiness certificate, these regulations do not apply and therefore an exemption is required. Pre/Post and routine inspections (not to exceed 50 flight hours) and maintenance will be conducted in accordance with the manufacturer's guidance as stated in the operations manual. In addition, to meet the intent of these regulations, APS, will maintain daily logs of pre and post flight inspections and have maintenance performed by certified technicians and/or the manufacturer themselves. In the event maintenance is required, certified technicians will verify the air vehicle is in flight readiness status prior to releasing to OIC for use in operations.

Unscheduled maintenance will be accomplished in the event of a mechanical or structural failure during flight. Upon completion of unscheduled maintenance, documentation will be provided to the Director of Operations to sign off and verify that the air vehicle is once again ready for flight and accept the level of risk associated with returning the air vehicle to flight status. At no time will there be changes made to the air vehicle which would impact the structural integrity of the air frame without the manufacturer making such changes and verifying the flight its air worthiness.

All inspection and maintenance will be documented and maintained in-house. These actions will meet the intent of the regulation exemption is being requested and lead to the equivalent level of safety.

NOTE: The FAA has recently set precedence to this regulation within like given parameters and an exemption should be approved on this basis. See exemption approvals for Astraeus Aerial, Aerial MOB, HeliVideo Productions, RC Pro Productions, Snaproll Media and Pictorvision.

IV. Public Interest

The public's best interest is achieved by the safe integration of UAS into the NAS. With the ongoing exemption process, the FAA has to identify those exemption requests with the public's best interest in mind and select the companies who will be able to achieve this in a safe and responsible manner. Two of the main problems the public has with UAS are the fear of what they will be used for and whether or not they are safe to fly within the same airspace as commercial airliners. APS is more than willing to help with public education and that starts with conducting operations within strict operating environments and then providing the results to the public to start to sway opinion in a positive light.

APS will provide any additional information requested and will diligently work with the FAA to make this approval a reality as it is in the best interest and safety of the public as directed by Congress

V. Privacy Concerns

As previously stated, one of the main concerns the public has with the integration of UAS into the NAS is privacy and spying; especially as of recent with the "disclosure" of the NSA's communication programs. The media has also placed a negative light on UAS when it comes to privacy; showing only how the military has used this technology to conduct combat operations through the use of the visual and infrared sensors they carry.

The most efficient and successful avenue to combat these concerns is to educate the public in how UAS technology will be used to exponentially improve all of our lives as Americans and place emphasize on how we should embrace the technology instead of fearing it. In these regards, APS, will look at actions we can take to move forward with this endeavor and assist the FAA and all UAS

employment companies as a whole to better public perception and create a cohesive environment we all can operate in safely.

VI. FAA Collaboration

APS is committed to the safe integration of UAS into the NAS and will provide any and all information on its flight operations to the FAA to assist in the rules making process. As stated in the operations section, post flight logs will be required to be completed to produce monthly flight summaries which will include both positive and negative reporting placing emphasize on any issues which may arise during any segment of the operations. APS offers the monthly summaries to the FAA as input and flight data to ensure accurate information is utilized along with offering our expertise and knowledge in the rule making process.

Summary ~ Federal Register

Pursuant to Section 333 of PL 112-95 commonly known as the "FAA Modernization and Reform Act of 2012" or "The Reform Act", Aerial Photography and Survey llc. (d/b/a APS), hereby applies for authorization to conduct commercial unmanned aerial systems (UAS) operations for the agriculture, aerial photography, construction, inspection, surveying, and wildlife preservation industries, within the State of Oregon ; within Class G and occasionally E airspace.
Rules in which APS seeks exemption:

- 14 C.F.R. Part 21 Subpart H
- 14 C.F.R. § 91.7(a)
- 14 C.F.R. § 45.23(b)
- 14 C.F.R. § 61.113 and 61.133(a)(1)(ii)
- 14 C.F.R. § 91.7(a)
- 14 C.F.R. § 91.103
- 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. § 91.405(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)

Throughout this exemption request, APS has shown how their expertise and knowledge with UAS technology will ensure the public's best interest is at hand and assist the FAA with their charge to: "...safely accelerate the integration of civil unmanned aircraft systems into the national airspace system..." as directed by Congress. They have also shown how the approval of this request will meet and exceed "...at least an equivalent level of safety..." for the regulations they seek exemption. At each level through process refinement, APS, will capture and document the best practices to develop proven tactics, techniques and procedures and provide that information to the FAA to incorporate into the UAS integration process.