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

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

August 3, 2015

Exemption No. 12293
Regulatory Docket No. FAA–2015–1348

Mr. Dennis Hahn
Cadence Valley LLC
5086 Riverside Drive South
Salem, OR 97306

Dear Mr. Hahn:

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 18, 2015, you petitioned the Federal Aviation Administration (FAA) on behalf of Cadence Valley LLC (hereinafter petitioner or operator) for an exemption. The petitioner requested to operate an unmanned aircraft system (UAS) to conduct video filming by air, photographing, inspecting, and training.[1]

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 also 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 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[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, Cadence Valley 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, Cadence Valley 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 August 31, 2017, unless sooner superseded or rescinded.

Sincerely,

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

Enclosures

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18 April 2015

U.S. Department of Transportation, Docket Operations
West Building Ground Floor, Room w12-140
1200 New Jersey Ave., SE Washington, DC 20590

Re: Exemption Request Under Section 333 of the Federal Aviation Administration Modernization and Reform Act of 2012

Dear Exemption Manager:

Pursuant to Section 333 of the FAA Modernization and Reform Act of 2012 and 14 CFR Part 11, I hereby submit this application for an exemption from the Federal Aviation Regulations (FARs) identified within this request to allow commercial operations of small unmanned aerial vehicles, so long as the operations are conducted within and under the conditions described below or as may be established by the FAA as required by Section 333.

This requested exemption would permit my company, Cadence Valley, to operate small, unmanned aerial vehicles, commonly referred to as sUAS, under controlled conditions in the national airspace. Operations would be conducted using the 3D Robotics IRIS+ in accordance with aircraft operating procedures described in the IRIS+ Operation Manual and the IRIS+ flight checklist, both of which are attached herein.

TYPE OF OPERATIONS

The limited, predetermined operations would focus on the following:

(a) Video filming by air and photographing for public and private purposes, including: television, cinematography, advertising, promotions, public or news mass events.
(b) Video filming by air and photographing to support professional operations in engineering, land surveying, architecture, real estate and other related professional activities.
(c) Inspections by air of agricultural areas.
(d) Inspections by air of infrastructure such as bridges, highways, electrical installations, dams, aqueducts, photovoltaic power stations, wind farms and pipes. These inspections will only be done under contract with property and facility owners or with applicable

local government authority.
(e) Inspection by air of land and residential, commercial and industrial structures, only under contract with the owners or with applicable local government authority.
(f) Inspections by air to detect sources of pollution and gas emissions, under contract with the owners in the area or with applicable local government authority.
(g) Inspections conducted specifically to support search and rescue operations and reconnaissance in cases of need, emergency or natural disasters and only when government authorities have requested it by contract or donation.
(h) Operations conducted for the purpose of training to persons, private and public entities interested in the safe use of UASs, for purposes of enhancing the skills and safety controls that make the NAS safer and for the protection of persons and property.

PUBLIC BENEFITS

Environmental and quality of life benefits: The IRIS+ is a relatively inexpensive sUAS that operates on rechargeable batteries. The sUAS is able to collect data and images previously only available through the operation of aircraft using fossil fuels, the use of which includes concomitant effects such as greenhouse gas emissions and loud engine noises that are often perceived as louder in rural areas. The targeted nature of sUAS operations can help to reduce flights over private landowners' homes.

Economic benefits: The operations described above provide competitive advantages to agricultural, real estate, engineering and other industries by offering aerial inspections that are high-quality, highly-controlled, more reliable, and accessible in real-time. Further, these operations are less costly, and would be available to businesses, including small businesses and individual farmers, that heretofore would have had to pursue more expensive alternatives or go without these types of services. For governments, being able to conduct activities critical to public safety using a more streamlined and less costly alternative frees up money in increasingly strapped public sector budgets for other services.

Public safety and safety of the national airspace benefits: sUAS operations provide an obvious benefit to both those in need and those participating, on either a paid or volunteer basis, in search and rescue efforts. The portability and responsiveness of sUASs can provide necessary information quickly and efficiently during emergency situations. Training by professional pilots related to the safe operation of sUASs benefits individual operators seeking a pathway for professional, targeted education and is critical to the safe integration of UASs into the national airspace. Finally, this potential exemption supports the broader national goal of establishing requirements for the safe operation of sUAS in the national airspace. A grant exemption would support a broader review of the types of aircrafts that can operate in the national airspace safely, which is a necessary step for rulemaking required under Section 333 of the FAA Modernization and Reform Act of 2012.

PIC BACKGROUND

In addition to my experience serving as the pilot-in-command of the sUAS described above, I am a military and FAA-rated civilian pilot: Commercial and Instrument Rated in Single Engine Fixed Wing and Rotary Wing Aircraft, Helicopter Airline Transport Pilot (ATP) and Certified Flight Instrument Instructor (CFI & CFII). I also hold and receive an annual medical flight "Up-Chit" from the U.S. Marine Corps and 2nd class or greater FAA medical certificate.

My aviation background means that I prioritize safe aircraft operations above all else. I am conditioned to following pre-flight inspections and maintenance and repair procedures. If this exemption is approved, I understand I would be responsible for maintaining and inspecting the IRIS+ to ensure it is ready for safe operation and following all manufacturer safety bulletins.

ADDITIONAL LEVEL OF SAFETY

Further, if this exemption is granted, I would adhere at the very least to the following limitations and conditions:

- Operations conducted at an altitude of no more than 400' AGL.
- Operations conducted using an sUAS weighing less than 55 lbs.
- Operations conducted within visual line of sight of the PIC.
- Operations conducted in conjunction with a safety observer who provides visual observations and is within communicable distance with the PIC at all times.
- Operations conducted during daylight hours under visual meteorological conditions (VMC).
- No operations conducted within 5 nautical miles of an airport, unless prior approval has been granted from the appropriate airport and ATC facilities.
- Operations conducted only after a weather assessment considering current and forecasted conditions is completed to ensure the sUAS can be operated within its limitations and provide enough power to ensure a 5 minute reserve.
- All sUAS flights that occur over private or controlled access property will do so with the property owner's prior consent and knowledge.

EXEMPTIONS AND SAFETY

To build on the above, I seek exemption from the following FAA regulations: part 21, subpart H; and Sections 45.23, 45.29, 91.7(a), 91.9(b)(2), 91.103(b), 91.109, 91.119, 91.121, 91.151(a), 91.203(a) and (b), 91.405(a), 91.407(a)(1), 91.409(a)(2), and 91.417(a) and (b) of Title 14, Code of Federal Regulations (14 CFR).

14 CFR Part 21, Airworthiness Certificates.

This part establishes the procedures for the issuance of an airworthiness certificate. While the FAA continues to work to develop airworthiness standards for sUAS, I request an experimental certificate be issued for the IRIS+ under either or both of the following provisions:

21.191 Experimental certificates.
Experimental certificates are issued for the following purposes:
(a) Research and development. Testing new aircraft design concepts, new aircraft equipment, new aircraft installations, new aircraft operating techniques, or new uses for aircraft.
(b) Showing compliance with regulations. Conducting flight tests and other operations to show compliance with the airworthiness regulations including flights to show compliance for issuance of type and supplemental type certificates, flights to substantiate major design changes, and flights to show compliance with the function and reliability requirements of the regulations.
Since the experimental certificate can be used for commercial purposes such as market surveys, sales demonstrations, and customer crew training, I would expect that an experimental certificate would permit my proposed commercial purposes as well. The aircraft will not carry persons or property, will not carry fuel, and will only fly under strict operational requirements. Combined with the sUASs' light weight, I propose that the sUAS will be at least as safe, if not safer, than a conventionally certificated aircraft performing the same mission. If an experimental airworthiness certificate is not appropriate for this application, then I request an exemption of 14 CFR Part 21, Subpart H, and the requirement for an airworthiness certificate in general, citing the equivalent level of safety outlined above.

14 CFR 45.23 Display of marks; general and 45.29 Size of marks.
These regulations provide that each aircraft must display "N" and the aircraft's registration number in letters at least 3 inches high. Additionally, the aircraft must display the word "EXPERIMENTAL" in letters at least 2 inches high near the entrance to the cabin, cockpit, or pilot station. The sUAS does not have an entrance in which the word "EXPERIMENTAL" can be placed, and may not have a registration number assigned to it by the FAA. I propose to achieve an equivalent level of safety by including the word "EXPERIMENTAL" or FAA approved "N" number on a placard on the top of the aircraft where the PIC, VO and others in the vicinity of the aircraft while it is preparing for launch will be able to see the designation.

14 CFR 91.7 Prohibits the Operation of an aircraft without an airworthiness certificate.
I requests relief from this regulation on the basis that there is no FAA regulatory standard for determining the airworthiness of a UAS. The PIC will conduct preflight mission and maintenance inspection of UAS prior to any flight. Flights will be terminated and maintenance action initiated to troubleshoot and repair the sUAS if the PIC decides at any time the sUAS in not in a safe for flight condition.

14 CFR 91.9 Civil aircraft flight manual, marking, and placard requirements.
This regulation provides that no person may operate an aircraft unless a current, approved flight manual is in the aircraft. I assume that the intent of this requirement is to ensure that flight

manual information is available to the aircrew while operating the aircraft. I request an exemption to this requirement since the aircraft is not only too small to carry documentation, the documentation would not be available to the crew during flight operations. To achieve an equivalent level of safety and meet the intent of 91.9, I propose that a current, approved sUAS Flight Manual must be available to the crew at the ground station anytime the aircraft is in, or preparing for, flight.

14 CFR 91.103(b) Runway lengths at airports of intended use.
I request relief from this regulation due to the nature of operating an sUAS. Runways will not be used. The PIC will conduct preflight planning using current satellite imagery such as “Google Earth” and current VFR Sectionals for the area and routing to be flown. PIC will also do a “walk through” of the area to be flown to verify obstacles and hazards that may exist.

14 CFR 91.109 Flight Instruction; Simulated instrument flight and certain flight tests
The regulation states, "No person may operate a civil aircraft that is being used for flight instruction unless that aircraft has fully functioning dual controls." The sUAS ground-based control station consists of a small hand-held radio transmitter and while it does not offer a second set of "controls," both the student and instructor can, and will, operate the single set of controls simultaneously. With both student and instructor having "hands-on" the controls during flight, this technique meets the intent 91.109 and provides an equivalent level of safety.

14 CFR 91.119 Minimum safe altitudes: General.
The regulation states that over sparsely populated areas the aircraft cannot be operated closer than 500 feet to any person, vessel, vehicle, or structure. Since one typical mission of the sUAS would be photography or survey of persons, vessels, vehicles or structures, it would be necessary to operate closer than 500 feet to the items listed. Operations will only be flown over property or persons where permission has been obtained and careful pre-planned has been performed. The aircraft will be operated at a low altitude allowing, if a power unit fails, an emergency landing without undue hazard to persons or property on the surface. I respectfully submit that due to the small size of the sUAS, the hazard to persons, vehicles and structures is minimal compared to manned aircraft, which should be considered in granting the exemption.

14 CFR 91.121 Altimeter settings.
The regulation requires that aircraft shall maintain cruising altitudes by reference to an altimeter setting available within 100 NM of the aircraft. I requests relief from this regulation due to the UAS’s ability to use barometric and GPS derived altitude. AGL altitude will be used and sUAS will remain below 400’ AGL at all times. An Above Ground Level altimeter measurement above the takeoff point is transmitted via radio from the sUAS on-board computer to the display screen held by the PIC, providing a constantly updated AGL readout.

14 CFR 91.151 Fuel requirements for flight in VFR conditions.

I request relief from this regulation due to the UAS's ability to only fly for 20-25 minutes with available battery life. I will not begin a flight unless (considering wind and forecast weather conditions) there is enough power for the UAS to conduct the intended flight and to operate after that for at least 5 minutes. Along with the "Return to Home" safety feature (which will automatically return the UAS to a predetermined safety landing area, we believe this will satisfy the "intent" of the regulation. The risk of fuel starvation (or total battery discharge) will be mitigated. The UAS also has warning displays to indicate battery "life". I will only operate during day time hours (the hours between official sunrise and sunset) and only in VFR conditions as defined in FAR Part 91.

14 CFR 91.203(a) & (b) Civil aircraft: Certifications required.
The regulation provides that an airworthiness certificate, with the registration number assigned to the aircraft and a registration certificate, must be aboard the aircraft. Additionally, subparagraph (b) provides that the airworthiness certificate be "displayed at the cabin or cockpit entrance so that it is legible to passengers or crew." The IRIS+ is too small to carry documentation, does not have an entrance, and is not capable of carrying passengers or crew. To obtain an equivalent level of safety and meet the intent of 91.203, I propose that documents deemed appropriate for this aircraft by the FAA will be co-located with the crew at the ground control station and available for inspection upon request.

14 CFR Subpart E (91.401- 91.417) - Maintenance, Preventive Maintenance, Alterations
The regulation provides that the operator is primarily responsible for maintaining the aircraft in an airworthy condition, including compliance with part 39 and 43. Paragraphs 91.407 and 91.409 require that the aircraft be "approved for return to service by a person authorized under 43.7" after maintenance and inspection. As previously stated, the PIC will perform maintenance and inspection of the aircraft. The PIC will ensure that the aircraft is in an airworthy condition prior to every flight and conduct detailed inspections after every two hours of flight. Maintenance performed by the PIC is limited to repairing small cracks, replacing a propeller, checking electrical connections and updating software and firmware for the on-board computer. All other maintenance will be performed by the manufacturer or its designated repair facility. The PIC will document work performed in accordance with 91.417. I feel that due to the size, construction, and simplicity of the aircraft, the PIC can ensure an equivalent level of safety.

Thank you for your consideration of this application. This exemption request is similar in scope to previously approved Grants of Exemption Nos. 11062, 11109, 1112, and 11213, and the information provided is intended to satisfy the requirements laid out by the FAA. I welcome any questions or requests for additional information to help expedite this exemption request.

Respectfully,

Dennis Hahn