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

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

April 29, 2015

Exemption No. 11445
Regulatory Docket No. FAA–2015–0143

Mr. Brian M. Walk
Unmanned Aerial Solutions
2 North Street, Suite 2A
Waldwick, NJ 07463

Dear Mr. Walk:

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

The Basis for Our Decision

By letter dated January 12, 2015, you petitioned the Federal Aviation Administration (FAA) on behalf of Unmanned Aerial Solutions (hereinafter petitioner or operator) for an exemption. The exemption would allow the petitioner to operate an unmanned aircraft system (UAS) to conduct aerial flights for community awareness projects, Near Infrared spectrographic analysis, real estate operations, and small event photography.

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

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

Airworthiness Certification

The UAS proposed by the petitioner are the Phantom 2 and Spreading Wings S1000.

The petitioner requested relief from 14 CFR part 21, *Certification procedures for products and parts, Subpart H—Airworthiness Certificates*. In accordance with the statutory criteria provided in Section 333 of Public Law 112−95 in reference to 49 U.S.C. § 44704, and in consideration of the size, weight, speed, and limited operating area associated with the aircraft and its operation, the Secretary of Transportation has determined that this aircraft meets the conditions of Section 333. Therefore, the FAA finds that the requested relief from 14 CFR part 21, *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, Unmanned Aerial Solutions 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, Unmanned Aerial Solutions 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 Phantom 2 and Spreading Wings S1000 when weighing less than 55 pounds including payload. Proposed operations of any other aircraft will require a new petition or a petition to amend this exemption.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

28. Any incident, accident, or flight operation that transgresses the lateral or vertical boundaries of the operational area as defined by the applicable COA must be reported to the FAA's UAS Integration Office (AFS−80) within 24 hours. Accidents must be reported to the National Transportation Safety Board (NTSB) per instructions contained on the NTSB Web site: www.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 April, 30, 2017, unless sooner superseded or rescinded.

Sincerely,

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

January 12, 2015

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

Re: Request for exemption from multiple regulatory provisions to allow the use of small unmanned aerial systems over land controlled by employees of Unmanned Aerial Solutions (AMS) to assist in the safe capture of video, images, and surveying of persons and property for commercial use.

Dear Sir or Madam

Unmanned Aerial Solutions (AMS) pursuant to the FAA Modernization and Reform Act of 2012 respectfully requests exemption from several provisions of the Federal Aviation Regulations ("FAR"), specifically portions of 14 C.F.R. Parts 45, 61, and 91 to allow, commercial operations of its unmanned aerial system in remote, rural, and closed production sets, areas of the United States, as further defined herein, by a Pilot in Command holding an Airline Transport pilot certificate, and the Unmanned Aerial Solutions Flight Operations Manual.

Brian Walk, and his company Unmanned Aerial Solutions, is an experienced FAA Air Transport Pilot. Mr. Walk is currently responsible for a single aircraft IS-BAO stage II private flight department. Mr. Walk has extensive knowledge and respect for the F.A.R.s that govern and certify manned aircraft. Mr. Walk has been an avid R/C model flyer for over twenty years. Brian Walk, Unmanned Aerial Solutions have been actively involved in the technical development of UAV/UAS service applications to provide high definition video, Near Infrared and surveying capability with small unmanned and light weight UASs. Unmanned Aerial Solutions exemption request would permit its operation of lightweight, unmanned (remotely controlled in line of sight) UASs in tightly controlled and limited airspace. Predetermined, specifically marked areas of operation, cordoned off locations and corresponding enhancements to current safety controls will allow Unmanned Aerial Solutions to operate within current safety parameters and new ones being implemented. As identified, similar lightweight, commercially available remote controlled UASs are legally operated by amateurs with no flight experience, or practices in place to prevent accidents or incidents from occurring. Unmanned Aerial Solutions will employ fully licensed and current pilots that are also experts in the flight characteristics of the UAS/UAV in which Unmanned Aerial Solutions operates.

Granting Unmanned Aerial Solutions requests furthers the Secretary of Transportations responsibility and authority to not only integrate UAS's into the national airspace system, but to "… establish requirements for the safe operation of such aircraft systems [UAS] in the nation airspace system" under section 333(c) of the Reform Act, specific to the use of UAS's for high definition video and Near Infrared scientific purposes. Unmanned Aerial Solutions will conduct operations in compliance with the protocols described herein or as otherwise established by the FAA.

I. Contact Information

Brian M. Walk
Unmanned Aerial Solutions
2 North Street, Suite 2A
Waldwick, NJ 07463
Mobile: 201-259-2343
Email: Brian@brianwalk.com

II. Specific Section of the Title 14 Code of Federal Regulations from which Unmanned Aerial Solutions requests exemption are:

14 CFR 21;
14 C.F.R. 45.23(b);
14 CFR 61.113 (a) & (b);
14 C.F.R. 91, et seq.;
14 CFR 407 (a) (1);
14 CFR 409 (a) (2); and,
14 CFR 417 (a) & (b).

III. The extent of the relief Unmanned Aerial Solutions seeks and reasons for relief.

Unmanned Aerial Solutions will operate as safely as possible, taking every precaution to minimize risk to the NAS or to persons and property on the ground. Brian Walk, is an experienced FAA Air Transport Pilot. Mr. Walk is currently responsible for a single aircraft IS-BAO stage II private flight department. Mr. Walk has extensive knowledge and respect for the F.A.R.s that govern and certify manned aircraft. Mr. Walk has been an avid R/C model flyer for over twenty years Brian Walk and Unmanned Aerial Solutions exemption will not adversely affect safety to persons or property by following the strict guidance set forth by its procedures and the operator's years of experience. By allowing Unmanned Aerial Solutions to operate, Unmanned Aerial Solutions pilots will be able to gain valuable real world experience that is unattainable any other way. Much like operating a commercial or corporate aircraft. Experience is gained through practical and safe real world experience. With this experience Unmanned Aerial Solutions will develop existing techniques and protocols, as well as develop new ones. In addition, Unmanned Aerial Solutions submits its Flight operations Manual attached to this Exemption Request. Included in the Unmanned Aerial Solutions Flight Operations Manual.

- Pilot in Command Qualifications and duties
- Second in Command Qualifications and duties
- Spotter qualifications and duties
- FAA Medical Requirements
- Pilot currency requirements
- Crew Resource Management objectives
- Safety Management System

Unmanned Aerial Solutions strives to provide a level of safety that exceeds the existing regulations. Unmanned Aerial Solutions strives to operate its UAS/UAV as closely and within practicality to the already proven safe F.A.R.s. It is significantly safer to operate a battery powered lightweight UAS piloted by FAA licensed pilots than the current helicopter based aerial cinematography systems. First, and foremost the potential loss of life is zero because UASs do not carry an on board crew and Unmanned Aerial Solutions only operates them in specific areas away from dense populations. UAS are battery powered, carrying no flammable liquids, thus the potential for fire or explosions is greatly diminished. Third, the small size and extreme maneuverability of Aerial Media Systms UASs allow our remote control pilots to avoid hazards. Given their small size and weight, they pose less of an environmental and

noise impact than conventional manned helicopter based systems available today. Unmanned Aerial Solutions UAS systems produce less noise than ground power units used to power small corporate aircraft. Thus reducing the acoustic footprint.

• Unmanned Aerial Solutions UASs weigh less than 55 pounds Max Tax off Weight

• Unmanned Aerial Solutions only operates its UASs below 400 feet;

• Unmanned Aerial Solutions UASs only operate for 5-25 minutes per flight;

• Unmanned Aerial Solutions lands its UASs when they reach 30% battery power;

• Unmanned Aerial Solutions remote control pilots operate Unmanned Aerial Solutions UASs by line of sight;

• Unmanned Aerial Solutions remote control pilots have video backup should they somehow lose sight of the UAS;

• Unmanned Aerial Solutions staffs each flight with a remote control pilot, technician and spotter with communication systems enabling real time communication between them;

• Unmanned Aerial Solutions UASs have GPS flight modes whereby they hover and then slowly land if communication with the remote control pilot is lost or battery power is below 30%;

• Unmanned Aerial Solutions actively analyses electronic flight data and other sources of information to constantly update and enhance safety protocols;

• Unmanned Aerial Solutions only operates in secured areas that are strictly controlled, are away from airports and populated areas;

• Unmanned Aerial Solutions conducts extensive briefing prior to flight, emphasizing safety.

Unmanned Aerial Solutions recognizes there is always a potential hazard to those on the ground. These people will be protected by the fact that the no one will be allowed entry into the operations area without prior permission. Security will be established for the operations area as part of the pre-flight inspections. Each person within the operations area will be briefed about the UAS system's flight and give consent to be in the operations area.

Unmanned Aerial Solutions UASs utilizes four or eight counter-rotating propellers for balance, control and stability in all segments of flight. Each craft weighs less than 55 pounds, including cinematic or other research equipment. Each of Unmanned Aerial Solutions small unmanned aircraft are designed to primarily hover in place and operate at less than a 50 knot maximum speed. They are capable of vertical and horizontal operations but operate only within the line of sight of the remote control pilot. In addition to the remote control pilot, Unmanned Aerial Solutions uses a spotter/ Second in Command and a technician, such that, at minimum, three Aerial Medial Systems personnel govern the safe flight of an Unmanned Aerial Solutions aircraft at all times. Utilizing battery power and not combustible fuels, flights generally last between five and twenty minutes. Unmanned Aerial Solutions does not operate its UASs with less than 30 percent battery capacity. Safety systems in place include a GPS mode that allows Unmanned Aerial Solutions UASs to hover in place if communication with the radio control pilot is lost

and then slowly descend the UAS at 30 percent battery capacity. Unmanned Aerial Solutions aircraft are programmed, in some instances, to slowly follow a predetermined set of waypoints to return to a safety point predetermined by the Pilot-In-Command if communications are lost.

Unmanned Aerial Solutions will not operate its UASs within 5 miles of airports and will not operate them over uncontrolled populated areas. The UAS operating software and GPS navigation systems do not allow any of the Unmanned Aerial Solutions UAS vehicles to operate near airports or FAA mandated no-fly zones. In the event an operation needs to be conducted closer to an airport, Unmanned Aerial Solutions will inform the airport operator and airport air traffic control tower of the contemplated operation and will comply with any directions issued by air traffic control at that airport Unmanned Aerial Solutions only operates its UASs in predetermined areas and only in compliance with safety protocols such as those contained within the its own Flight Operations Manual. Unmanned Aerial Solutions Flight Operations Manual is tailored to UAS flight, and as closely as practical follows guidelines set forth for the operation of the multi-crew manned aircraft.

Unmanned Aerial Solutions operation of its small unmanned aircraft will not "create a hazard to users of the national airspace system or the public." 112 P.L. 95 § 3 3 3 (b). Given the small size and weight of Unmanned Aerial Solutions UASs, combined with their operation in cordoned off and well-controlled areas, Unmanned Aerial Solutions flight operations fall within Congress's contemplated safety zone when it disseminated the Reform Act and the corresponding directive to integrate UASs into the national airspace system. Unmanned Aerial Solutions UASs have a demonstrable safety record and do not pose any threat to the general public or national security.

IV. How Unmanned Aerial Solutions request will Benefit the public as a whole:

Granting Unmanned Aerial Solutions exemption request furthers the public interest in many ways. Congress has pronounced that it is in the public's interest to integrate commercially flown UASs into the national airspace system. Unmanned Aerial Solutions will conduct research into safe UAS operations every time it flies one of its UASs. Flight data, visual inspections, recorded observations and flight analyses are compiled to further enhance current safety procedures. Unmanned Aerial Solutions intends on using their Near Infrared technology to work with golf courses to reduce and more efficiently use pesticides and water resources. This furthers the public interest by reducing the amount of chemicals put into the ground as well as precious fresh water supplies. Allowing Unmanned Aerial Solutions to provide high definition video of real estate for sale, will bring a non-invasive and non-dramatic use of UAS into the public's everyday life. Unmanned Aerial Solutions believes that by seeing a UAS used in small applications will promote a positive view towards UASs, instead of historically known military applications. Unmanned Aerial Solutions also believes that UAS used for real estate will be beneficial to its local economy by offering a different and unique view to properties that would otherwise go unnoticed.

Allowing Unmanned Aerial Solutions to fly commercially, will allow real world experience to help develop better and more robust safety procedures. The public has an interest in reducing the danger and emission associated with current aerial cinematic capture methods, namely, full size helicopters. Unmanned Aerial Solutions UASs are battery powered and create no emissions. If an Unmanned Aerial Solutions UAS crashes, there is no fuel to ignite and cause significant damage or injury. The impact of Unmanned Aerial Solutions lightweight UASs is far less than a full size helicopter or current aerial platforms. Although, the noteworthy safety record of full size helicopters used in the motion picture industry currently is impeccable. The public's interest is furthered, by minimizing ecological and crash impacts, by permitting motion picture capture through Unmanned Aerial Solutions lightweight UASs. Aerial Medial Systems has been analyzing flight data and other information into novel safety protocols. These procedures and lessons will be implemented into flight operations manual that exceeds currently

accepted means and methods of safe flight. Unmanned Aerial Solutions and Brian Walk through years of command experience on large cabin corporate aircraft, have based their Flight operations manual off of an IBAO stage II manual for a manned aircraft, of which Brian Walk is the author of. Congress mandated the integration of UASs into our national airspace system, in part, to achieve progression in this field. Permitting Unmanned Aerial Solutions to immediately fly within the United States furthers these goals. Whether it is the scientific discoveries applicable to feature film making to advancements in publicly usable technologies, or advancements in equipment available to law enforcement personnel I first responders that does not cost millions of dollars.

V. Reasons Why Unmanned Aerial Solutions Exemption Will Not Adversely Affect Safety Or How The Exemption Will Provide a Level of Safety At Least Equal To Existing Rule:

Unmanned Aerial Solutions strives to provide a level of safety that exceeds the existing regulations. Unmanned Aerial Solutions strives to operate its UAS/UAV as closely and within practicality to the already proven safe F.A.R.s. It is significantly safer to operate a battery powered lightweight UAS piloted by FAA licensed pilots than the current helicopter based aerial cinematography systems. First, and foremost the potential loss of life is zero because UASs do not carry any crew and Unmanned Aerial Solutions only operates them in specific areas away from dense populations. UAS are battery powered, carrying no flammable liquids, thus the potential for fire or explosions is greatly diminished. Third, the small size and extreme maneuverability of Aerial Media Systms UASs allow our remote control pilots to avoid hazards. Given their small size and weight, they pose less of an environmental and noise impact than conventional manned helicopter based systems available today. Unmanned Aerial Solutions UAS systems produce less noise than ground power units used to power small corporate aircraft. Thus reducing the acoustic footprint.

• Unmanned Aerial Solutions UASs weigh less than 55 pounds Max Tax off Weight

• Unmanned Aerial Solutions only operates its UASs below 400 feet;

• Unmanned Aerial Solutions UASs only operate for 5-25 minutes per flight;

• Unmanned Aerial Solutions lands its UASs when they reach 30% battery power;

• Unmanned Aerial Solutions remote control pilots operate Unmanned Aerial Solutions UASs by line of sight;

• Unmanned Aerial Solutions remote control pilots have video backup should they somehow lose sight of the UAS;

• Unmanned Aerial Solutions staffs each flight with a remote control pilot, technician and spotter with communication systems enabling real time communication between them;

• Unmanned Aerial Solutions UASs have GPS flight modes whereby they hover and then slowly land if communication with the remote control pilot is lost or battery power is below 30%;

• Unmanned Aerial Solutions actively analyses electronic flight data and other sources of information to constantly update and enhance safety protocols;

• Unmanned Aerial Solutions only operates in secured areas that are strictly controlled, are away from airports and populated areas;

• Unmanned Aerial Solutions conducts extensive briefing prior to flight, emphasizing safety.

Unmanned Aerial Solutions recognizes there is always a potential hazard to those on the ground. These people will be protected by the fact that the no one will be allowed entry into the operations area without prior permission. Security will be established for the operations area as part of the pre-flight inspections. Each person within the operations area will be briefed about the UAS system's flight and give consent to be in the operations area.

Unmanned Aerial Solutions UASs utilizes four or eight counter-rotating propellers for balance, control and stability in all segments of flight. Each craft weighs less than 55 pounds, including cinematic or other research equipment. Each of Unmanned Aerial Solutions small unmanned aircraft are designed to primarily hover in place and operate at less than a 50 knot maximum speed. They are capable of vertical and horizontal operations but operate only within the line of sight of the remote control pilot. In addition to the remote control pilot, Unmanned Aerial Solutions uses a spotter/ Second in Command and a technician, such that, at minimum, three Aerial Medial Systems personnel govern the safe flight of an Unmanned Aerial Solutions aircraft at all times. Utilizing battery power and not combustible fuels, flights generally last between five and twenty minutes. Unmanned Aerial Solutions does not operate its UASs with less than 30 percent battery capacity. Safety systems in place include a GPS mode that allows Unmanned Aerial Solutions UASs to hover in place if communication with the radio control pilot is lost and then slowly descend the UAS at 30 percent battery capacity. Unmanned Aerial Solutions aircraft are programmed, in some instances, to slowly follow a predetermined set of waypoints to return to a safety point predetermined by the Pilot-In-Command if communications are lost.

Unmanned Aerial Solutions will not operate its UASs within 5 miles of airports and does not operate them over uncontrolled populated areas. The UAS operating software and GPS navigation systems do not allow any of the Unmanned Aerial Solutions UAS vehicles to operate near airports or FAA mandated no-fly zones. In the event an operation needs to be conducted closer to an airport, Unmanned Aerial Solutions will inform the airport operator and airport air traffic control tower of the contemplated operation and will comply with any directions issued by air traffic control at that airport Unmanned Aerial Solutions only operates its UASs in predetermined areas and only in compliance with safety protocols such as those contained within its own Flight Operations Manual. Unmanned Aerial Solutions Flight Operations Manual is tailored to UAS flight, and as closely as practical follows guidelines set forth for the operation of the multi-crew manned aircraft.

Aerial Medial Systems operation of its small unmanned aircraft will not "create a hazard to users of the national airspace system or the public." 112 P.L. 95 § 3 3 3 (b). Given the small size and weight of Unmanned Aerial Solutions UASs, combined with their operation in cordoned off and well-controlled areas, Unmanned Aerial Solutions flight operations fall within Congress's contemplated safety zone when it disseminated the Reform Act and the corresponding directive to integrate UASs into the national airspace system. Unmanned Aerial Solutions UASs have a demonstrable safety record and do not pose any threat to the general public or national security.

VI. A Summary The FAA May Publish in the Federal Register:

A. 14 C.F.R. 21 and 14 C.F.R. 91: Airworthiness Certificates, Manuals and The Like.

14 C.F.R. 21, Subpart H, entitled Airworthiness Certificates, sets forth requirements for procurement of necessary airworthiness certificates in relation to FAR §91.203(a)(1). The size, weight and enclosed operational area of Unmanned Aerial Solutions, UAS permits exemption from Part 21 because our UAS meets (and exceeds) an equivalent level of safety pursuant to Section 333 of the Reform Act. The FAA is authorized to exempt aircraft from the airworthiness certificate requirement under both the Act (49 U.S.C. § 44701 (f)) and Section 333 of the Reform Act. Both pieces of legislation permit the FAA to exempt UAS's from the airworthiness certificate requirement in consideration of the weight, size, speed, maneuverability and proximity to areas such as airports and dense populations. Unmanned Aerial Solutions, current and projected UAS's meet or exceed each of the elements.

14 C.F.R. 91.7(a) prohibits the operation of an aircraft without an airworthiness certificate. As no such certificate will be applicable in the form contemplated by the FARs, this Regulation is inapplicable.

14 C.F.R. § 91.9 (b) (2) requires an aircraft flight manual in the aircraft. As there are no on board pilots or passengers, and given the size of the UAS's, this Regulation is inapplicable.

10 The FAA has previously issued exemptions to this regulation in Exemption Nos. 8607, 8737,8738, 9299, 9299A, 9565, 9565B, 10167, 10167A, 10602, 10700 and 32827. 14 C.F.R. § 91.121 regarding altimeter settings is inapplicable insofar as my UAS utilizes electronic global positioning systems with a barometric sensor.

14 C.F.R. § 91.203 (a) and (b) provides for the carrying of civil aircraft certifications and registrations. They are inapplicable for the same reasons described above. The equivalent level of safety will be achieved by maintaining any such required certifications and registrations by Unmanned Aerial Solutions.

B. 4 C.F.R. § 45.23: Marking of the Aircraft.

Applicable Codes of Federal Regulation require aircraft to be marked according to certain specifications. Unmanned Aerial Solutions sUAS are, by definition, unmanned. They therefore do not have a cabin, cockpit or pilot station on which to mark certain words or phrases. Further, two-inch lettering is difficult to place on such small aircraft with dimensions smaller that minimal lettering requirement. Regardless, I will mark its UASs in the largest possible lettering by placing the word “EXPERIMENTAL” on its fuselage as required by 14 C.F.R. §45.29 (f) so that I the pilot, or anyone assisting me as a spotter with the UAV will see the markings. The FAA has previously issued exemptions to this regulation through Exemptions Nos. 8738, 10167, 10167A and 10700.

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

PIC. Pursuant to 14 C.F.R. §§ 61.113 (a) & (b), private pilots are limited to non-commercial operations Unmanned Aerial Solutions, can achieve an equivalent level of safety as achieved by current Regulations because my UAS does not carry any pilots or passengers. Further, while helpful, a pilot license will not ensure remote control piloting skills. The risks attended to the operation of my UAS is far less than the risk levels inherent in the commercial activities outlined in 14 C.F.R. § 61, et seq. Thus, allowing, Unmanned Aerial Solutions, to operate my UAS meet and exceed current safety levels in relation to 14 C.F.R. §61.113 (a) & (b).

D. 14 C.F.R. 91.119: Minimum Safe Altitudes.

14 C.F.R. § 91.119 prescribes safe altitudes for the operation of civil aircraft. It allows helicopters to be operated at lower altitudes in certain conditions. My UAS will never operate at an altitude greater than 200 AGL; safely below the standard of 400 AGL. Unmanned Aerial Solutions, will however operate its UAS in safe areas away from public and traffic, providing a level of safety at least equivalent to or below those in relation to minimum safe altitudes. Given the size, weight, maneuverability and speed of my UAS, an equivalent or higher level of safety will be achieved.

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

10 Appendix E - Safety/Flight Manual

The above-cited Regulations require, amongst other things, aircraft owners and operators to "have [the] 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. . . ." These Regulations only apply to aircraft with an airworthiness certificate. They will not, therefore, apply Unmanned Aerial Solutions UAS. However, as a safety precaution Unmanned Aerial Solutions will inspect its UAS before and after each flight.

A Summary The FAA May Publish in the Federal Register: A. 14 C.F.R. 21 and 14 C.F.R. 91: Airworthiness Certificates, Manuals and The Like. 14 C.F.R. 21, Subpart H, entitled Airworthiness Certificates, sets forth requirements for procurement of necessary airworthiness certificates in relation to FAR § 91.203(a)(1). The size, weight and enclosed operational area of Unmanned Aerial Solutions UAS permits exemption from Part 21 because Unmanned Aerial Solutions, UAS meets an equivalent level of safety pursuant to Section 333 of the Reform Act. The FAA is authorized to exempt aircraft from the airworthiness certificate requirement under both the Act (49 U.S.C. § 44701 (f)) and Section 333 of the Reform Act. Both pieces of legislation permit the FAA to exempt UAS's from the airworthiness certificate requirement in consideration of the weight, size, speed, maneuverability and proximity to areas such as airports and dense populations. Unmanned Aerial Solutions UAS meets or exceeds each of the elements. 14 C.F.R. 91.7(a) prohibits the operation of an aircraft without an airworthiness certificate. As no such certificate will be applicable in the form contemplated by the FARs, this Regulation is inapplicable. 14 C.F.R. § 91.9 (b) (2) requires an aircraft flight manual in the aircraft. As there are no pilots or passengers, and given the size of the UAS's, this Regulation is inapplicable. An equivalent level of safety will be achieved by maintaining a manual. The FAA has previously issued exemptions to this regulation in Exemption Nos. 8607, 8737, 8738, 9299, 9299A, 9565, 9565B, 10167, maintenance program that involves regular software updates and curative measures for any damaged hardware. Therefore, an equivalent level of safety will be achieved.

In summary Unmanned Aerial Solutions seeks an exemption from the following Regulations:

14 C.F.R. 21, subpart H; 14 C.F.R. 45.23(b); 14 C.F.R. §§ 61.113 (a) & (b); 14 C.F.R. §91.7 (a); 14 C.F.R. § 91.9 (b)(2); 14 C.F.R. § 91.103(b); 14 C.F.R. § 91.109; 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) and (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. §91.409 (a) (2); and, 14 C.F.R. §§ 91.417 (a) & (b) to commercially operate Unmanned Aerial Solutions', small unmanned vehicle/lightweight unmanned aircraft vehicle in

favorable, safe community awareness projects, Near Infrared spectrographic analysis, real estate operations, and small event photography. Currently Near Infrared spectrograph/videography/photography relies primarily on the use of larger aircraft running on combustible fuel flying low. Posing potential risk to the public. Granting Unmanned Aerial Solutions, request for exemption will reduce current risk levels and thereby enhance safety. Unmanned Aerial Solutions UAS craft do not contain potentially explosive fuel, is smaller, lighter and more maneuverable than conventional video and photographic aircraft with much less flight time. Further, I operate at lower altitudes and in controlled airspace eliminating potential public risk flying to and from established air fields. Unmanned Aerial Solutions has written and will work on refining current safety protocols, and flight manuals that exceed currently accepted means and methods for safe flight. Formal collection of information shared with the FAA will enhance the FAA's internal efforts to establish protocols for complying with the FAA Modernization and Reform Act of 2012. There are no personnel on board Unmanned Aerial Solutions UAS and therefore the likelihood of death or serious bodily injury is significantly diminished. Unmanned Aerial Solutions', operation of my UAS, weighing less than 55 pounds and travelling at lower speeds within limited areas will provide an equivalent level of safety as that achieved under current FARs. Unmanned Aerial Solutions respectfully request that the FAA grant it's exemption.

Sincerely,

Brian M. Walk