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

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

May 11, 2015

Exemption No. 11549
Regulatory Docket No. FAA–2015–0292

Mr. Mark Thomas
President
Thomas' Wildlife Solutions, Inc.
14 Lorraine Road
Westerly, RI 02891

Dear Mr. Thomas:

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 February 2, 2015, you petitioned the Federal Aviation Administration (FAA) for an exemption. The petitioner requested to operate an unmanned aircraft system (UAS) to conduct aerial videography/cinematography for marketing, exterior structure inspections, and volunteer search and rescue missions.

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, Thomas' Wildlife Solutions, Inc. 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, Thomas' Wildlife Solutions, Inc. 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

Mark Thomas, Thomas Wildlife Solutions, Inc. - Section 333 Exemption Petition

February 2, 2015

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

Re: Exemption Request Section 333 of the FAA Reform Act of the Federal Aviation Regulations from 14 C. F. R. 45.23(b); 14 C. F. R. Part 21; 14 C. F. R. 61.113(a)&(b); 91.7(a); 91.9(b) (2); 91.103(b); 91.109; 119. 121; 91.151(a); 91.203(a)&(b); 91.405(a); 91.407(a) (1); 91.409(a) (2); 91.417(a)&(b)

Dear Sir or Madam,

I, Mark Thomas, am writing pursuant to the FAA Modernization and Reform Act of 2012 and the procedures contained within 14 C. F. R. 11, to request that I, Mark Thomas, an owner and operator of small unmanned aircraft, be exempt from the Federal Aviation Regulations ("FARs") listed below so that I, Mark Thomas, may operate my small ultra light weight unmanned aircraft system ("UAS") commercially in airspace regulated by the federal Aviation Administration ("FAA").

As described herein I, Mark Thomas, am a FAA Certificated Single Engine ("ASEL") and Multi Engine ("AMEL") pilot with Instrument privileges. I, Mark Thomas, have accumulated in excess of 500 hours as a certificated pilot and currently fly an average of over 100 hours per year in the National Airspace System ("NAS").

I, Mark Thomas, am experienced in flying hobby helicopters for recreational purposes and have added a hobby grade quad-copter UAS[1] to my inventory which is equipped with a GoPro Hero camera with intent for aerial videography/cinematography to enhance the safety of my employees, my clients, and the general public, as well as for marketing purposes and volunteer Search and Rescue ("SAR") missions; following exemption and approval by the FAA.

I, Mark Thomas, have flown small RC electric helicopters in excess of 8 years without incident. Committed to safety on each flight. My, Mark Thomas', exemption request would permit operation of ultra light weight, unmanned (piloted by remote control) and comparatively inexpensive UAS(s) in tightly controlled and limited airspace. Predetermined in areas away from general public, airports, heliports and vehicular traffic for Search and Rescue, and within property boundaries for individual property owner exterior inspections. Currently, similar lightweight, remote controlled UAS's are legally operated by unmonitored, amateur hobbyists

1 Appendix A – 3D Robotics Iris+ Operation Manual

with no Pilot Certificate, no safety plan or controls in place to prevent catastrophe. I, Mark Thomas, have personally instilled safety protocols and controls[23] to avoid and prevent public hazard, as well as manned aircraft hazards/catastrophe. This will act to further safety protocols exclusive to lightweight UAS's specific to inspection video and photography usage and Search and Rescue efforts as I, Mark Thomas, record flight data[4] and other information gained through permitted flight operations to share with the FAA through any required reports to assist with future protocol and safety regulations.

Granting my, Mark Thomas', request comports with the Secretary of Transportation's (FAA Administrator's) responsibilities 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's] in the national airspace system" under Section 333(c) of the Reform Act specific to use of UAS's for exterior home inspection and volunteer Search and Rescue efforts.

For the reasons stated below I, Mark Thomas, respectfully request the grant of an exemption allowing me to operate ultra light weight, remote controlled UAS's for the purpose of exterior structure inspections and to assist in volunteer Search and Rescue efforts to located missing and / or lost persons. Use of UAS's for exterior structure inspections will promote economic growth by allowing for greater accuracy and documentation of inspections thereby increasing the need for trained employees to perform the necessary repair work, as well as, improving the safety to employees, clients and the general public by reducing exposure to ladder accidents. The volunteer Search and Rescue efforts will benefit the public by allowing aerial viewing of large areas in a more timely manner while reducing the exposure to large aircraft carrying volatile fuel. These large aircraft also impact the environment through exhaust emissions and noise levels not present in small electric aircraft.

I. Contact Information:

Mark Thomas, President
Thomas' Wildlife Solutions, Inc.
14 Lorraine Road
Westerly, RI 02891
Mobile: (401) 633-4018
Email: Mark.roadking@gmail.com

II. The Specific Sections of Title 14 of the Code of Federal Regulations from Which Mark Thomas Requests Exemption are:

2 Appendix B – Manufacturers Pre-flight Checklist
3 Appendix C – Personal Pre-flight Checklist
4 Appendix D – Sample Flight Data Record

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

III. The Extent of relief Mark Thomas seeks and the Reason He Seeks Such Relief:

I, Mark Thomas, submit this application in accordance with the Reform Act, 112 P.L. 95 §§ 331-334, seeking relief from any currently applicable FARs operating to prevent my, Mark Thomas', contemplated commercial cinematic, academic, humanitarian and other flight operations within the national airspace system. The Reform Act in Section 332 provides for such integration of civil unmanned aircraft systems into our national airspace system as it is in the public's interest to do so. My, Mark Thomas', ultra light weight UAS meets the definition of "small unmanned aircraft" as defined in Section 331 and therefore the integration of my ultra light weight UAS is expressly contemplated by the Reform Act. I would like to operate my ultra light weight UAS prior to the time period by which the Reform Act requires the FAA to promulgate rules governing such craft. Thereby providing direct experience and valuable information for formal regulation that can be administered uniformly to all exterior structure inspection as well as, search and rescue aerial video and photography. The Reform Act guides the Secretary in determining the types of UAS's that may operate safely in our national airspace system. Considerations include: The weight, size, speed and overall capabilities of the UAS's; Whether the UAS will be operated near airports or heavily populated areas; and, Whether the UAS will be operated by line of sight. 112 P. L. 95 § 333 (a). Each of these items reflect in favor of an exemption for me, Mark Thomas. My UAS utilizes four (4) counter-rotating propellers for balance, control, stability and redundancy and weighs less than three and one half (3½) pounds (far below the maximum 55 pound limit); including camera and gimbal.

I Mark Thomas, consider safety as foremost with each flight. My small unmanned aircraft is designed to hover in place via GPS and operate in less than a 24 knot (15 mph) wind. For safety, stability and fear of financial loss I do not and will not fly in winds in excess of 16 knots (10 mph). Built in safety systems include a GPS mode that allows my UAS to hover in place when radio controls are released. With five (5) modes to choose from, I utilize loiter mode for aerial videography/photography. This is the safest, most reliable and stable mode to prevent accident and hazard. If pilot communication is lost the UAS is designed to either slowly descend to a landing below its location at the time of signal loss, or, to return to the point of

takeoff and slowly descend to a landing. This option is selectable prior to takeoff. I do not operate my UAS near airports, hospitals nor heliports, and do not operate near areas where the general public is within fifty to one hundred (50 – 100) yards depending on location, conditions and weather. I am constantly on alert for any manned aircraft (Police/Medical helicopters, aerial applicators, etc.) and am prepared to land/abort immediately to the nearest and safest ground point should a manned aircraft approach my location or I suspect manned aircraft may approach near my location. My UAS is capable of vertical and horizontal operations, and is flown only within my line of sight as the remote control pilot. Utilizing battery power rather than combustible fuels, flights generally last between three (3) to five (5) minutes at an altitude under one hundred fifty (150) feet. I, Mark Thomas, utilize a fully charged battery with each flight as a safety precaution; full flight time for each battery is eight (8) to eleven (11) minutes as tested. I do not operate my UAS at or below manufacturer recommended minimum charge levels for operation; preferring to remain well within a safe operating range to insure adequate communication between radio control and UAS to eliminate potential for crash, loss of control or hazard. Reserve batteries are at hand with each exercise to insure replacement for sufficient safe level of operation. I do not believe in taking risk that may cause a crash, that could create hazard to the public/property/manned aircraft, and have no desire to lose an investment. I have logged numerous practice flights in remote areas as a hobbyist in order to simulate flight for future commercial use in order to gain familiarization with the characteristics of this specific UAS's performance under differing temperature and weather conditions. I also use a computerized flight simulator to maintain and improve skill levels for the sake of safety.

I, Mark Thomas, am extremely cautious when operating my UAS/ultra light weight unmanned aircraft and will not "create a hazard to the users of the national airspace system or the public." 112 P.L. 95 § 333 (b). Given the small size and weight of my UAS it falls well within Congress's contemplated safety zone when it promulgated the Reform Act and the corresponding directive to integrate UAS's into the national airspace system. My, Mark Thomas', UAS, used in hobby flight, has a demonstrable safety record and does not pose any threat to the general public or national security.

IV. How Mark Thomas' Request Will Benefit the Public As A Whole:

Aerial videography and photography has been used for quite sometime through manned fixed wing and rotary wing aircraft and, more recently, via satellite. Structure inspections have been performed in various ways including aerial photography, videography, ladders and lift equipment. Traditional aerial videography and photography is not only cost prohibitive for many property owners, lifts sometimes will not fit onto the property and when they do, often times cause damage to lawns, septic drainage fields and other items. Ladders, especially for taller structures, are heavy and unwieldy. These ladders can fall causing injury and damage,

carrying them poses injury risk and, can cause injury to the general public when dropped or by falling. In some instances, the spaces around a structure is even too confining for the proper use of a ladder. Manned aircraft for such use poses a threat through potential catastrophic crashes. These aircraft carry combustible fuel which can explode in an impact. Small UAS's can perform these inspection functions in a more timely, safer, more cost effective and less intrusive manner thereby increasing public safety and reducing costs to property owners. The small UAS's carry no combustible fuel, have very little noise footprint and a much reduced danger in the event of a system failure.

Congress has already proclaimed that it is in the public's interest to integrate commercially flown UAS's into the national airspace system, hence the passing of the Reform Act. Granting my, Mark Thomas', exemption request furthers the public interest by increasing the viable availability of aerial videographic/photographic inspection of structures without the risks of larger combustible fuel aircraft and the costs associated therewith, the cost and and potential damage caused by mechanical lifts, and the potential hazards caused by traditional ladders. The consequences of my ultra light weight UAS crashing is far less than a full size aircraft which are heavy, contain combustible fuel and can cause catastrophic devastation to the public.

The public's interest is furthered by minimizing ecological impact and crash threat by permitting aerial video/photo capture through my battery operated ultra light weight UAS's. Permitting me, Mark Thomas, to immediately fly within national air space furthers economic growth, safety, and humanitarian efforts.

V. Reasons Why Mark Thomas' Exemption Will Not Adversely Affect Safety Or How The Exemption Will Provide a Level of Safety Equal to Existing Rule:

My, Mark Thomas', exemption will not adversely affect safety. Quite the contrary, for the reasons stated, permitting me, Mark Thomas, to log more flight time with UAS's in FAA controlled airspace, with communication with the FAA, will allow me to contribute to the innovation and implementation of new and novel, as of yet undiscovered, safety protocols for others wishing to utilize UAS's for building and structure inspection as well as Search and Rescue efforts.

- My UAS weighs less than 3½ pounds complete with a small ultra light weight high quality camera;
- I only operate my UAS below 200 feet (well within the 400 foot permissible ceiling set by the FAA Modernization and Reform Act of 2012);
- My UAS's only operate for 3 - 7 minutes per flight;
- I land my UAS prior to manufacturer recommended minimum level of battery power;

- I pilot my UAS through remote control ONLY within line of sight;
- My UAS has GPS as a flight safety feature whereby it hovers and then slowly lands if communication with the remote pilot is lost;
- I actively analyze flight data and other sources of information to constantly update and enhance safety protocols;
- I only operate in reasonably safe environments that are strictly controlled, are away from power lines, elevated lights, airports and actively populated areas;
- I conduct extensive pre-flight inspections and protocol, during which safety carries primary importance;
- I always acquire all necessary permissions prior to operation; and,
- I have procedures in place to abort flights in the event of safety breaches or potential danger.

My, Mark Thomas', safety protocols provide a level of safety equal to or exceeding existing rules. It is important to note that absent the integration of commercial UAS's into our national airspace system, helicopters are the primary means of aerial videography and photography. While the safety record of these aircraft is remarkable, there have been instances of catastrophic failure and loss of life with extensive property damage; it is far safer to operate a battery powered ultra light weight UAS.

- First, the potential loss of life is minimized because UAS's carry no people onboard and I only operate my UAS in areas away from mass populations.
- Second, there is no volatile fuel onboard my UAS and thus the potential for fire or explosions is greatly diminished.
- Third, the small size and extreme maneuverability of my AUS allows me to remotely pilot away from and avoid hazards quickly and safely.
- Lastly, given its small size and weight, even when close enough to capture amazing images, my AUS need not be so close to the objects they are focused on through the technology and use of post filming editing software allowing for pan and zoom.

Accordingly, my UAS has been operated as a hobbyist for familiarization / competency and will continue to operate at and above currently accepted safety levels.

VI. A Summary That 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, entitles 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 my, Mark Thomas', UAS(s) permits

exemption from Part 21 because my 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 in consideration of the weight, size, speed, maneuverability and proximity of areas such as airports and dense populations. My, Mark Thomas', 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 onboard 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 safety/flight manual delineating areas where safety can be defined. The FAA has previously issued exemptions to this regulation in Exemptions Nos. 8607, 8737, 8738, 9299, 9299A, 9565, 9565B, 10167, 10602, 10700, 32827 as well as 11138.

14 C.F.R. 91.121 regarding altimeter settings is inapplicable insofar as my UAS utilizes electronic global positioning systems with barometric sensors.

14 C.F.R. 91.203 (a) and (b) provides for 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 such required certifications and registrations by me, Mark Thomas.

B. 14 C.F.R. 45.23: Marking of the Aircraft.

Applicable codes of the Federal Regulations require aircraft to be marked according to certain specifications. My UAS's 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 craft with dimensions smaller than minimal lettering requirements. Regardless, I , Mark Thomas, will mark my UAS's in the largest possible lettering by placing the word "EXPERIMENTAL" on it's fuselage as required by 14 C.F.R. 45.29(f) so that I the pilot, or anyone assisting me as a spotter 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 (a) and (b) Private Pilot Privileges and Limitations: PIC.

Pursuant to 14 C.F.R. 61.113 (a) and (b) private pilots are limited to non-commercial operations. I, Mark Thomas, am a current Private Pilot Certificate holder with a valid

third class physical. My UAS does not carry pilots or passengers. The risks pertaining to the operation of my UAS's are far less than the level of risk inherent in the commercial activities outlined in 14 C.F.R. 61, et seq. Thus allowing me, Mark Thomas, to operate my UAS's in a manner which will meet or exceed current levels of safety in relation to 14 C.F.R. 61.113 (a) and (b). The FAA has previously issued exemptions to this regulation in other cases including 11138. While The FAA has issued exemptions to 14 C.F.R. 61.113 (a) and (b), it has maintained that the pilot must hold a private pilots certificate which I, Mark Thomas, do hold.

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 feet AGL; safely below the standard of 400 feet AGL. I, Mark Thomas, will however operate my AUS in safe areas away from the public and traffic, providing a level of safety at least equivalent to or exceeding those in relation to minimum and/or maximum safe altitudes. Given the size, weight, maneuverability and speed of my AUS's, 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

The above sited 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 to my, Mark Thomas', AUS's. However, as a safety precaution I inspect my AUS's 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 my UAS permits exemption from Part 21 because my, Mark Thomas', 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. My 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 FAR's, the 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 and 11138 , 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, Mark Thomas 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 my, Mark Thomas', small unmanned vehicle/lightweight unmanned aircraft vehicle in structure inspections and volunteer Search and Rescue operations. Currently, aerial property/structure inspections are performed by much larger aircraft operating on combustible fuel posing potential risk to the public. Other property/structure inspections of this nature are performed using ladders, aerial lifts, and/or ropes and harnesses which expose the inspecting personnel to falls, strains, and injury. These pieces of equipment also pose a hazard to the public as they sometimes fall or can be dropped. The ladders alone weigh more than my, Mark Thomas' UAS. Granting this petition for exemption will reduce the risks involved with ladders and/or aerial lifts thereby enhancing safety. Currently, aerial search and rescue efforts are also conducted using larger aircraft powered by volatile fuel which, in the event of a crash can and has caused explosions and catastrophic damage to persons and property. Granting my, Mark Thomas' petition for exemption will reduce the current risk levels to the public and property thereby enhancing safety. My UAS craft do not contain potentially explosive fuel, is smaller, lighter and more maneuverable than conventional aircraft used for similar functions. Further, I operate at lower altitudes and in an very small amount of airspace eliminating potential public risk from flying to and from established air fields. I, Mark Thomas, have been analyzing flight data informally and will compile protocols for safety and implement a flight operations manual for aerial structural inspection using a UAS, as well as, for voluntary search and rescue operations that exceed currently accepted means and measures for safe flight. Formal collection of data shared with the FAA and other interested organizations will enhance efforts to establish protocols for complying with the FAA Modernization and Reform Act of 2012. I, Mark Thomas, would also willingly volunteer time and effort to assist in setting guidelines and structure for training future AUS pilots. There are no personnel aboard my, Mark Thomas', UAS and therefore the likelihood of death or serious bodily injury is significantly diminished. My, Mark Thomas', operation of my UAS, weighing less than 3½ pounds and traveling at lower speeds within limited areas will provide an equivalent or greater

level of safety as that achieved under current FARs. Accordingly I, Mark Thomas, respectfully request that the FAA grant my exemption request and am willing to cooperate in sharing information to benefit the FAA, safety of manned aircraft, and the general public at large.

Respectfully Submitted,

Mark Thomas – President
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