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

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

May 22, 2015

Exemption No. 11679
Regulatory Docket No. FAA–2015–0706

Mr. Ronald Stites and Mr. Michael Kitchen
R&M Aerial Imagery, LLC
4412 Monmouth Castle Road
Virginia Beach, VA 23455

Dear Messrs. Stites and Kitchen:

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

By letter dated March 16, 2015, you petitioned the Federal Aviation Administration (FAA) on behalf of R&M Aerial Imagery, LLC (hereinafter petitioner or operator) for an exemption. The petitioner requested to operate an unmanned aircraft system (UAS) to conduct aerial imagery and surveying.

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 DJI Inspire 1.

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, R&M Aerial Imagery, 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, R&M Aerial Imagery, LLC is hereafter referred to as the operator.

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

1. Operations authorized by this grant of exemption are limited to the DJI Inspire 1 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 5 minutes or with the reserve power recommended by the manufacturer if greater.

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

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

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

These documents must be made available to the Administrator or any law enforcement official upon request.

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

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

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

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

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

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

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

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

30. At least 3 days before aerial filming, the operator of the UAS affected by this exemption must submit a written Plan of Activities to the local Flight Standards District Office (FSDO) with jurisdiction over the area of proposed filming. The 3-day

notification may be waived with the concurrence of the FSDO. The plan of activities must include at least the following:

a. Dates and times for all flights;
b. Name and phone number of the operator for the UAS aerial filming conducted under this grant of exemption;
c. Name and phone number of the person responsible for the on-scene operation of the UAS;
d. Make, model, and serial or N−Number of UAS to be used;
e. Name and certificate number of UAS PICs involved in the aerial filming;
f. A statement that the operator has obtained permission from property owners and/or local officials to conduct the filming production event; the list of those who gave permission must be made available to the inspector upon request;
g. Signature of exemption holder or representative; and
h. A description of the flight activity, including maps or diagrams of any area, city, town, county, and/or state over which filming will be conducted and the altitudes essential to accomplish the operation.

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

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

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

Sincerely,

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

Enclosures

March 16, 2015

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

Dear Sir or Madam:

Attached please find R&M Aerial Imagery, LLC' s request for an exemption from the listed Federal Aviation Regulations to allow commercial operations of its Small Unmanned aircraft Systems ("sUASs") for aerial imagery and survey of; real estate, ground structure exteriors, research, development, test and evaluation of sUAS flight operations aerial support within the designated FAA low altitude restrictions for local, state, and federal government agencies.

R&M Aerial Imagery, LLC is a veteran owned Virginia corporation. The company has over 30 years aviation flight experience in private and US Navy operations: mission planning, airspace de-confliction and management, airways navigation, airport takeoff and landing procedures (VFR and IFR), aviation safety, research, development, test and evaluation (RDT&E), airframe functional check flights, aviation accident investigations, scheduling, maintenance, aviation simulation, and standardized training and flight procedures. The two principals of R&M Aerial Imagery have 60 years combined experience in mechanics, electronics, electro-mechanical repair, and ground safety. The attached company Operations Manual outlines our safe and standardized operating guidelines for sUAS operations, training, maintenance, and documentations from flight brief to debrief.

Thank you for your time and consideration, and please contact us with any questions.

Ronald Stites and Michael Kitchen
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March, 9 2015
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I. RELEVANT STATUTORY AUTHORITY

Pursuant to Section 333 of the FAA Modernization and Reform Act of 2012 (the Reform Act), R&M Aerial Imagery, LLC, (the operator); Ronald Paul Stites and Michael Brent Kitchen (the applicants), planned operators of Small Unmanned Aircraft Systems (sUASs) equipped to conduct aerial photography and survey for various industries hereby applies for an exemption from Federal Aviation Regulations (FARs) to allow commercial operation of their sUASs, so long as such operations are conducted within and under the conditions outlined herein or as may be established by the FAA as required by Section 333.

As described more fully below, the requested exemption would permit the operation of sUAS by the applicants for commercial use that would provide the following benefits:

1. Operations would be performed in an area of operation limited in size suitable to the specific use, briefed in advance of flight.

2. The flight would be planned in advance to minimize hazards to persons and property in the air and on the ground.

3. The operator would reasonably limit or control access to provide safety to those not involved in the operation.

4. Operation of a sUAS would provide significant safety, environmental and other enhancements not possible by larger sized aircraft.

5. An FAA licensed airman will operate the sUAS.

6. Provide a beneficial and currently unavailable service to government organizations and the general public that would serve the public interest.

Approval of this exemption would thereby enhance safety and fulfill the Secretary of Transportation's (the FAA Administrators) responsibilities to "establish requirements for the safe operation of such aircraft systems in the national airspace system." Section 333(c) of the Reform Act.

It is possible to operate sUASs so to not create a hazard to users of the National Airspace System (NAS), the public or pose a threat to national security if done so safely and responsibly.

AIRCRAFT AND EQUIVALENT LEVEL OF SAFETY

The applicants propose that the exemption requested herein apply to civil aircraft that have the characteristics of sUAS and that operate with the limitations listed herein. These limitations provide for at least an equivalent or higher level of safety to operations under the current regulatory structure as the proposed operations represent a safety

enhancement to the already safe aerial commercial photography and survey operations conducted with conventional aircraft.

The sUAS's to be operated are multi-rotorcraft (MR), each weighing 55 or fewer pounds including payload. They would operate, under normal conditions, at a speed of no more than 50 knots. The principal construction material of these sUAS craft lightweight composites and/or plastic. Operations will be performed by a qualified sUAS operator (the Pilot in Command, PIC), as outlined below, to insure that the sUAS will "not create a hazard to users of the national airspace system or the public." Given the small size of the sUASs involved and the pre-planned environment within which they will operate, the applicant believes that these operations fall squarely within that zone of safety (an equivalent level of safety) in which Congress envisioned that the FAA must, by exemption, allow commercial operations of sUASs to commence immediately. Our standard sUAS operations (see attached Operations Manual) will prevent any possible national security issues. The operation of sUASs by knowledgeable professionals with experience in the NAS will serve to enhance safety, add to the public benefit and reduce environmental impacts related to current methods of aerial photography and survey.

II. R&M AERIAL IMAGERY LLC PROPOSED OPERATIONS MEET THE REQUIREMENTS OF SECTION 333 OF THE REFORM ACT

R&M Aerial Imagery LLC shall abide by FAA regulations when conducting commercial sUAS flight operations.

1. Safety is the first and foremost consideration for all sUAS commercial and flight training operations.
2. The sUAS operator will be an FAA licensed airman (preferably Armed Forces veterans).
3. sUAS Observers will assists the sUAS PIC with help in spotting and avoiding other air traffic, objects aloft, or ground hazards.
3. All flights will be conducted within line of sight of the operator.
4. The sUAS will weigh less than 55 pounds total.
5. Flights will be operated in FAA designated sUAS airspace envelopes.
6. The relevant airspace controlling agency will be notified as far in advance as practicable. For flights within 5 miles of an airport, the operator will provide the airport operator or the airport air traffic control tower (if the ATC is co-located at the airport) with prior notice of the operation.
7. All flights will be operated under visual flight rules (VFR).
8. The sUAS will give way to any aircraft carrying people.
9. Minimum crew for each operation will consist of the sUAS PIC and observer. The Observer will monitor safety of flight and will be in voice communication with the PIC.
10. Prior to a sUAS flight, the flight brief and FAA airspace requirements will establish the mission flight envelope. All collision hazards will be noted and safety procedures for ground personnel, property and flight emergencies will be defined.
11. Flight planning will include flight completion with at least 25 percent (25%) battery power remaining as measured by the sUAS software.

12. All sUAS aircraft will utilize GPS navigation, failsafe, return-to-home (RTH) and/or flight abort safety features.
13. All required permissions and permits will be obtained from applicable private, local, state, and federal governmental agencies.
14. Written electronic and/or oral permission from relevant property owners will be obtained prior to an operation.
15. The sUAS pilot will be a FAA licensed airman trained in advance for the safe operation of the sUAS to be operated. R&M Aerial Imagery's training syllabus is outlined in our Operations Manual (attached). This will include operation of the sUAS both in normal and emergency modes of operation, and will include complete familiarization with the sUAS manufacturer operation manual.
16. R&M Aerial Imagery representatives will establish a working relationship with the local FSDO to annually review safety procedures and other operations to further enhance safety.
17. R&M Aerial Imagery will conduct research, development, test and evaluation of sUAS operations with government agencies and provide lessons learned to all interested parties.

III. REGULATIONS FROM WHICH EXEMPTION IS REQUESTED

14 CFR Part21, Subpart H: Airworthiness Certificates
14 C.F.R. Part 21, Subpart H - Airworthiness Certificates and 14 C.F.R. §91.203(a)(l) The FAA has stated that no exemption is needed from this section if a finding is made under the Reform Act that the sUAS selected provides an equivalent level of safety when compared to aircraft normally used for the same application. These criteria are met, and therefore no exemption is needed. *See* Grant of Exemption to Astraeus Aerial, Docket No. F AA-2014-0352 at 13-14,22. If, however, the FAA determines that there are some characteristics of the chosen sUAS that fail to meet the requirements of the Reform Act, an exemption is requested.

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.

Subparagraph (b) provides that the airworthiness certificate be "displayed at the cabin or cockpit entrance so that it is legible to passengers or crew." A sUAS 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, we 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. In order to identify the aircraft, we propose the use of the sUAS' unique manufacturers serial number, and a contact telephone number be mounted on the sUAS on a placard of reasonable size in relation to the sUAS. In the event that a unique manufacturers serial number is not available, the previously mentioned placard will be affixed to the sUAS consisting of the model name and number of the sUAS, as well as a contact telephone number.

A. Equivalent Level of Safety

The sUASs identified in the Operations Manual are safe when taking into account their size, weight, speed, and operational capability. All of the sUASs weigh less than 55 pounds and will be flown at less than 30 miles per hour. The sUASs carry neither pilots nor passengers, carry no explosive materials and or flammable liquid fuels, and operate exclusively within the parameters stated in the Operations Manual.

For commercial hire, R&M Aerial Imagery will fly the DJI Inspire 1 with the following model specifications:

Weight	(Battery Included) 2935 g
Hovering Accuracy (GPS mode)	Vertical: 0.5 m Horizontal: 2.5 m
Max Angular Velocity	Pitch: 300°/s Yaw: 150°/s
Max Tilt Angle	35°
Max Ascent Speed	5 m/s
Max Descent Speed	4 m/s
Max Speed	22 m/s (no wind)
Max Flight Altitude	4500 m
Max Wind Speed Resistance	10 m/s
Max Flight Time Approximately	18 minutes
Diagonal Distance	559 to 581 mm
Dimensions	438x451x301 mm

DJI Remote Controller

Operating Frequency 5.725~5.825 GHz 2.400~2.483 GHz

Transmitting Distance (outdoor and unobstructed) 2 km

If, in the future, R&M Aerial Imagery procures different models of sUAS (Other than DJI Inspire 1) for use in commercial operations, we shall provide the FAA with: model name, specifications, controlling frequencies, safety information, and maintenance plans and documentation. ,

***2 See* 49 U.S.C. § 44701(f) (authorizing the grant of exemptions from requirements of regulations prescribed pursuant to Sections 44701 (a) and (b) and Sections 44702 - 44716).**

***3 See* 14 C.F.R. § 11.81(e), which requires a petition for exemption to include:**
The reasons why granting the exemption would not adversely affect safety, or how the exemption would provide a level of safety at least equal to that provided by the rule from which you seek exemption.

Operations under this exemption will be closely controlled and monitored by the operator and will be conducted in compliance with local public safety requirements, to provide security for the area of operation. R&M Aerial Imagery will provide the FAA with advance notice of all operations via coordination with the local FSDO. In all cases, the

sUASs operated under the proposed conditions, will be at least as safe as, or safer than conventional rotorcraft operating with an airworthiness certificate without the restrictions and conditions of the proposed sUAS operations.

The aircraft themselves do not need a means to communicate with other aircraft or ATC. *See* Grant of Exemption, Docket FAA-2014-0352 at 13.

B. 14 C.F.R. Part 27 Airworthiness Standards: Normal Category Rotorcraft
14 C.F.R. Part 27 sets forth the procedural requirements for airworthiness certification of normal category rotorcraft. To the extent the Petitioner's sUASs would otherwise require certification under Part 27, Petitioner seeks an exemption from Part 27's airworthiness standards for the same reasons identified in the request for exemption from 14 C.F.R. Part 21, Subpart H, *supra*.

C. 14 C.F.R. §§ 91.9(c), 4S.23(b) and 4S.27(a): Aircraft Marking and Identification Requirements
Petitioner seeks an exemption from the aircraft marking and identification requirements contained in 14 C.F.R. §§ 91.9(c), 45.23(b) and 45.27(a).

• 14 C.F.R. § 91.9(c), Civil Aircraft Flight Manual, Marking and Placard requirements, provides that:

No person may operate a U.S.-registered civil aircraft unless that aircraft is identified in accordance with Part 45 of this chapter.
14 C.F.R. § 45.23(b), Markings of the Aircraft, states:
When marks include only the Roman capital letter "N" and the registration number is displayed on limited, restricted or light-sport category aircraft or experimental or provisionally certificated aircraft, the operator must also display on that aircraft near each entrance to the cabin, cockpit, or pilot station, in letters not less than 2 inches nor more than 6 inches high, the words "limited," "restricted," "light-sport, "experimental," or "provisional," as applicable.
• 14 C.F.R. § 45.27(a), Rotorcraft, states:
Each operator of a rotorcraft must display on that rotorcraft horizontally on both surfaces of the cabin, fuselage, boom, or tail the marks required by § 45.23. In a previous Grant of Exemption, the FAA determined that exemption from these requirements was warranted provided that the aircraft "have identification (N-Number) markings in accordance with 14 CFR part 45, Subpart C if the markings are as large as practicable." *Re* FAA Docket No. FAA-2014-0352.

Equivalent Level of Safety
R&M Aerial Imagery will mark all aircraft with their N-Number in a prominent spot on the fuselage with markings that are as large as practicable.

14 C.F.R. § 91.9(b)(2): Civil Aircraft Flight Manual in the Aircraft and 14 C.F.R. § 91.203(a) and (b): Carrying Civil Aircraft Certification and Registration

Pursuant to 14 C.F.R. § 91.9(b)(2):
(b) No person may operate a U.S.-registered civil aircraft-
(2) For which an Airplane or Rotorcraft Flight Manual is required by § 21.5 of this chapter, unless there is available in the aircraft a current approved Airplane or Rotorcraft Flight Manual, approved manual material, markings, and placards, or any combination thereof.
Pursuant to 14 C.F.R. § 91.203(a) and (b):
(a) Except as provided in § 91.715, no person may operate a civil aircraft unless it has within it the following:
(1) An appropriate and current airworthiness certificate.(b) No person may operate a civil aircraft unless the airworthiness certificate required by paragraph (a) of this section or a special flight authorization issued under § 91.715 is displayed at the cabin or cockpit entrance so that it is legible to passengers or crew.

R&M Aerial Imagery does not request an exemption from this section but instead notifies the FAA that, in accordance with FAA Office of Chief Counsel's Opinion dated August 8, 2014, the sUAS flight manual, registration certificate and other documentation will be kept at the control station with the PIC during flight. The Chief Counsel's Office has held that for all sUAS operations, this alternate method constitutes full compliance with the regulations.

E. **14 C.F.R. § 91.7(a): Civil Aircraft Airworthiness**
Petitioner seeks an exemption from 14 C.F.R. § 91.7(a), which requires that a civil aircraft be in airworthy condition to be operated. The FAA has stated that no exemption is required to the extent that the requirements of Part 21 are waived or found inapplicable. Accordingly, Petitioner requests that the requirements for Section 91.7 be treated in accordance with Section III (A), *supra*.

F. 14 C.F.R. § 91.103: Preflight Action
Petitioner seeks an exemption from 14 C.F.R. § 91.103, which requires a PIC to become familiar with specific information before each flight, including information contained in the FAA-approved Flight Manual on board the aircraft. While the PIC will be familiar with all information necessary to safely conduct the flight, an exemption is requested to the extent that an FAA-approved Flight manual is required.

Equivalent Level of Safety
An equivalent level of safety will be provided by following the company Operations Manual and flight manual provided by the manufacturer. The PIC will take all required preflight actions - including performing all required checklists and reviewing weather, flight requirements, battery charge, landing and takeoff distance, aircraft performance data, and contingency landing areas - before initiation of flight. The Operations Manual and manufacturer's flight manual will be kept at the ground station with the operator at all times.

G. 14 C.F.R. § 91.109(a): Flight Instruction

Petitioner seeks an exemption from 14 C.F.R. § 91.109(a), which provides that "[n]o person may operate a civil aircraft (except a manned free balloon) that is being used for flight instruction unless that aircraft has fully functioning dual controls." sUASs and remotely piloted aircraft, by their design, do not have functional dual controls. Instead, flight control is accomplished through the use of a device that communicates with the aircraft via radio frequency.

Equivalent Level of Safety

Given the size and speed of the sUASs employed by R&M Aerial Imagery, an equivalent level of safe training can still be performed without dual controls because no pilot or passengers are aboard the sUASs, and all persons will be a safe distance away in the event that the sUASs experience any difficulties during flights. Training flights will be conducted with the provisions in the Operations Manual and in compliance with FAA approved sUAS airspace envelopes. Accordingly, R&M Aerial Imagery's proposed method of operation provides equivalent levels of safety.

H. 14 C.F.R. § 91.119: Minimum Safe Altitudes

Petitioner requests an exemption from the minimum safe altitude requirements of 14 C.F.R. § 91.119. Section 91.119 prescribes the minimum safe altitudes under which aircraft may not operate, including 500 feet above the surface and away from any person, vessel, vehicle, or structure in non-congested areas. *See* 14 C.F.R. § 91.119(c). Section 91.119(d) allows for a helicopter to operate at less than those minimum altitudes when it can be operated "without hazard to persons or property on the surface," provided that "each person operating the helicopter complies with any routes or altitudes specifically prescribed for helicopters by the FAA."

Equivalent Level of Safety

Compared to flight operations with rotorcraft weighing far more than the maximum weights proposed herein, and given the lack of flammable fuel, any risk associated with these operations is far less than those that presently exist with conventional aircraft. An equivalent level of safety will be achieved given the size, weight, and speed of the sUASs, as well as the location where it is operated. In order to avoid any risk to aircraft, flight operations will be restricted to 400' AGL or below.

I. 14 C.F.R. § 91.121: Altimeter Settings

The regulation provides that aircraft shall maintain cruising altitudes by reference to an altimeter setting available within 100 nautical miles of the aircraft. This petition seeks an exemption from 14 C.F.R. § 91.12 I, which requires a person operating an aircraft to maintain cruising altitude or flight level by reference to an altimeter that is set to the elevation of the departure airport or barometric pressure. The sUAS will normally will be flying close to the ground, and in line of sight of the PIC. This line of sight operation will provide separation from other aircraft, obstructions, terrain, and would override the use of an altimeter for such a purpose.

Equivalent Level of Safety
The FAA has stated that an equivalent level of safety can be achieved if the sUASs will be operated at 400' AGL or below and within visual line-of-sight in addition to GPS based altitude information relayed in real time to the operator. *See* Grant of Exemption to Astraeus Aerial, Docket No. FAA-2014-0352. As the attached aircraft Owner's Manual indicates, the chosen sUASs meets these requirements, and a zero altitude initiation point will be obtained prior to flight.

J. 14 C.F.R. § 91.1S1(a): Fuel Requirements for Flight in VFR Conditions

Petitioner requests an exemption from 14 C.F.R. § 91.151(a)'s fuel requirements for flight in VFR conditions. Section 91.151 states:

(a) No person may begin a flight in an airplane under VFR conditions unless (considering wind and forecast weather conditions) there is enough fuel to fly to the first point of intended landing and, assuming normal cruising speed –

(1) During the day, to fly after that for at least 30 minutes; or

(2) At night, to fly after that for at least 45 minutes.

Here, the technological limitations on sUAS battery power means that no meaningful flight operations can be conducted while still maintaining a 30 minute reserve. R&M Aerial Imagery proposes that all flights comply with this requirement by mandating that the aircraft be safely landed with no less than 25% of battery life remaining.

Equivalent Level of Safety

The FAA has stated that an equivalent level of safety is provided if the UAS flight is terminated with at least 25% reserve battery power still available. *See* Grant of Exemption to Astraeus Aerial, Docket No. FAA-2014-0352.

K. 14 C.F.R. § 91.405(a), 91.407(a)(1), 91.409(a)(2); 91.417(a) and (b):
Maintenance Inspections

Petitioner seeks an exemption from the maintenance inspection requirements contained in 14 C.F.R. § 91.405(a), 91.407(a)(1), 91.409(a)(2); 91.417(a) and (b). These regulations specify maintenance and inspection standards in reference to 14 C.F.R. Part 43. *See, e.g.,* 14 C.F.R. §91.405(a) (stating that each owner or operator of an aircraft "[s]hall have the aircraft inspected as prescribed in subpart E of this part and shall between required inspections ... have discrepancies repaired as prescribed in part 43 of this chapter"). An exemption from these regulations is needed because Part 43 and these sections only apply to aircraft with an airworthiness certificate, which the sUAS will not have.

Equivalent Level of Safety
An equivalent level of safety will be achieved because maintenance and inspections will be performed in accordance with the sUAS aircraft owner's manuals and inspection recommendations. R&M Aerial Imagery has elected to use its own process to maintain its sUAS and ensure that only airworthy and safe sUAS will be allowed to operate in the NAS. Maintenance will be "on condition" for all aircraft.

The Operations Manual also sets requirements for maintenance log books and record keeping as well as routine and post-flight maintenance. The Manual sets requirements for both annual maintenance and preventative maintenance based on hours of flight.

L. 14 C.F.R. § 61.113: Private Pilot Privileges And Limitations
Petitioner seeks exemption from 14 CFR § 61.113, which restricts private pilot certificate holders from flying aircraft for compensation or hire, and would also require a second class medical certificate. The purpose of Part 61 is to ensure that the skill and competency of any PIC matches the airspace in which the PIC will be operating, as well as requiring certifications if the private pilot is carrying passengers or cargo for hire. In this case, while the sUASs will be operated as part of a commercial operation, it carries neither passengers nor cargo. In the Grant of Exemption in FAA Docket No. FAA-2014-0352, the FAA determined that the unique characteristics of sUAS operation outside of controlled airspace did not warrant the addition cost and restrictions attendant with requiring a PIC to have a commercial pilot certificate and class II medical certificate.

Equivalent Level of Safety
Sections 61.113 (a) and (b) limit private pilots to non-commercial operations. Because the sUAS will not carry a pilot or passengers, the proposed operations can achieve the equivalent level of safety of current operations by requiring the PIC operating the aircraft to have a private pilot's license rather than a commercial pilot's license to operate a small sUAS. Unlike a conventional manned aircraft, a sUAS is remotely controlled by a ground-based operator. The operational area is controlled and restricted, and all flights are planned and coordinated in advance. The risks associated with the use of a sUAS are so diminished from the level of risk associated with commercial operations contemplated by Part 61 allowing sUAS use by a private pilot as the PIC exceeds the present level of safety sought by 14 C.F.R.§61.113 (a) and (b).

IV. DRUG AND ALCOHOL PROGRAM
R&M Aerial Imagery has policies in place to ensure that no person may act as a PIC, observer, or sensor operator if they are under the influence of alcohol or any drug.

V. PUBLIC INTEREST

Granting R&M Aerial Imagery exemption request furthers the public interest. National policy set by Congress favors early integration of UAS into the NAS in controlled, safe working environments such as those proposed in this petition. In addition, the public also has an interest in reducing the hazards and emissions associated with alternate

use of helicopters to conduct similar inspection operations. The sUASs in question are very light and do not carry any flammable fuel, further reducing the risk from any potential accident.

R&M Aerial Imagery intended uses for the sUASs have real-world benefits for civilian markets, local, state and federal government entities and the public at large. This will allow R&M Aerial Imagery to inspect difficult to reach structures (smokestacks, chimneys, building roofs, etc.). R&M Aerial Imagery sUASs enable elevated viewpoints that are less expensive than traditional crane and boom operations with a smaller ecological footprint. The sUAS work will aid in R&M Aerial Imagery member companies' risk assessment, risk management, loss control, and surety performance programs. These programs prevent accidents and injuries, and there is a strong public interest in making these programs more effective through the use of sUASs.

Coordination and teaming with federal, state and local governments in preparation for emergencies will provide valuable training and onsite information to first responders and government entities.

VI. PRIVACY

All flights will be conducted in accordance with any federal, state or local laws regarding privacy.

VII. FEDERAL REGISTER SUMMARY

Pursuant to 14 C.F.R. Part 11, the following summary is provided for publication in the Federal Register, should it be determined that publication is needed:

R&M Aerial Imagery seeks an exemption from the following rules:
14 CFR Part 21, Subpart H; 14 CFR Part 27; 14 CFR 45.23(b); 14 CFR § 61.113; 14 CFR 91.7(a); 14 CFR 91.9(b)(2); 14 CFR 91.103; 14 CFR 91.109(a); 14 CFR 91.119; 14 CFR 91.121; 14 CFR 91.151(a); 14 CFR 91.203 (a) & (b); 14 CFR 91.405(a); 14 CFR 91.407(a)(1); 14 CFR 91.409(a)(2); 14 CFR 91.417 (a) & (b).

The exemption will enhance safety by reducing risk to the general public and property owners from the substantial hazards associated with performing equivalent work with conventional aircraft and rotorcraft.

VIII. CONCLUSION

Satisfaction of the criteria provided in Section 333 of the Reform Act of 2012-size, weight, speed, operating capabilities, proximity to airports and populated areas, operation within visual line of sight, and national security-provides more than adequate justification for the grant of the requested exemptions to permit R&M Aerial Imagery to operate the selected sUASs and provide opportunities for RDT&E in coordination with local, state and federal agencies.

Granting the requested exemption will benefit the public interest as a whole in, many ways, including (1) significantly improving safety and reducing risk by alleviating human exposure to danger, and (2) improving the quality of services and decreasing operating costs compared with conventional flight operations.

If you have any questions or require any additional information, please do not hesitate to call or email.

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Attachments:

1) R&M Aerial Imagery Operations Manual,
2) Inspire_1_User_Manual_v1.0
3) Inspire_1_Maintenance_ManualV1.0