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

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

July 1, 2015

Exemption No. 11972
Regulatory Docket No. FAA–2015–0512

Mr. Dave Ratner
Counsel for Aerial Imaging Productions, LLC
Creative Law Network
2036 East 17th Avenue
Denver, CO 80206

Dear Mr. Ratner:

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 posted March 2, 2015, you petitioned the Federal Aviation Administration (FAA) on behalf of Aerial Imaging Productions, LLC (hereinafter petitioner or operator) for an exemption. The exemption would allow the petitioner to operate an unmanned aircraft system (UAS) to conduct aerial photography for the motion picture and television industry for scripted closed set filming.

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 DJI Inspire 1 and DJI Phantom 3.

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

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

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

Our Decision

In consideration of the foregoing, I find that a grant of exemption is in the public interest. Therefore, pursuant to the authority contained in 49 U.S.C. 106(f), 40113, and 44701, delegated to me by the Administrator, Aerial Imaging Productions, 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 closed set motion picture and television filming. This exemption is subject to the conditions and limitations listed below.

Conditions and Limitations

In this grant of exemption, Aerial Imaging Productions, 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 and DJI Phantom 3 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 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 July 31, 2017, unless sooner superseded or rescinded.

Sincerely,

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

Aerial Imaging Productions, LLC's Petition for Section 333 Exemption
For Purposes of Operating Small Unmanned Aircraft Systems

FAA Rules Docket: _____

Name and Address of Petitioner

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A. Summary

Aerial Imaging Productions, LLC (AIP) seeks exemption from the requirements of 14 C.F.R. §§ 45.23(b), 61.113(a) and (b), 91.7(a), 91.9(b)(2), 91.103(b)(2), 91.109(a), 91.119(c), 91.121(a)(1)(iii), 91.151(b), 91.203(a) and (b), 91.405(a), 91.407(a)(1), 91.409(a)(2), 91.417(a) and (b), as well as the requirement to have a certificate of airworthiness under 14 C.F.R. Part 21, Subpart H, so as to permit it to: keep any required documents or information at the ground control station; display any required markings on the unmanned aircraft; inspect, maintain and preflight in accordance with AIP's flight and operating procedures manual; operate below 400 feet AGL, without an onboard altimeter, at 30 minutes or a 20% battery power reserve. AIP further seeks the exemption to allow a private pilot to conduct commercial sUAS operations.

B. Introduction

AIP is an operator of Small Unmanned Aircraft Systems ("sUASs") equipped to conduct aerial photography for the motion picture and television industry for scripted closed set filming. As set forth in this Petition, AIP seeks an exemption to allow commercial operation of its sUAS(s) (as identified in AIP's FOPM), 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 333.1

Pursuant to 14 C.F.R. § 11.81 (*Petition for Exemptions*.), AIP provides the following information in support of its petition:

C. Basis for Petition

AIP, by and through undersigned counsel, pursuant to Federal Aviation Regulations (FAR) (14 C.F.R. § 11.61)[1] and the FAA Modernization and Reform Act of 2012 (FMRA), Section 333, *Special Rules for Certain Unmanned Aircraft Systems* (Section 333), hereby respectfully petitions the Administrator for an exemption from the requirements of 14 C.F.R. §§ 45.23(b), 61.113(a) and (b), 91.7(a), 91.9(b)(2), 91.103(b)(2), 91.109(a), 91.119(c), 91.121(a)(1)(iii), 91.151(b), 91.203(a) and (b), 91.405(a), 91.407(a)(1), 91.409(a)(2), 91.417(a) and (b), as well as the requirement to have a certificate of airworthiness under 14 C.F.R. Part 21, Subpart H.

1. Section 333

Congress identifies Section 333 as a pathway for "expedited operational authorization" of certain small unmanned aircraft systems (sUAS) in the national airspace system (NAS). Section 332(b)(1) ("expedited operational authorization."). Under Section 333 Congress mandates that the FAA "shall determine if certain unmanned aircraft systems may operate safely in the national airspace system before completion of the plan and rulemaking required by section 332 of this Act or the guidance required by section 334 of this Act" (Section 333(a)) upon consideration of its "size, weight, speed, operational capability, proximity to airports and populated areas, and operation within visual line of sight." Section 333(b)(1). If the FAA

[1] 14 C.F.R. § 11.61**(b)** ("Using a petition for exemption, you may ask FAA to grant you relief from current regulations in 14 C.F.R..")

makes such a determination, the FAA "shall [also] establish requirements for the safe operation." Section 333(c). The FAA further may find that the sUAS does not require "airworthiness certification under section 44704 of title 49, United States Code." Section 333(b)(2).

2. 49 U.S.C. § 44701

The FAA is further authorized to grant exemptions from its safety regulations and minimum standards under 49 U.S.C. § 44701 ("Section 44701") "if the Administrator finds the exemption is in the public interest." Section 44701(f) (authorizing the grant of exemptions from safety regulations and minimum standards under section 44701(a) and (b) and sections 44702-44716).[2]

For the reasons addressed herein, this Petition qualifies for expedited approval of AIP's request for exemption under both Sections 333 and 44701.

D. The sUAS(s) Meets the Statutory Criteria for Exemption under Section 333

Given its small size, light weight, slow speed, limited load capacity, operational capabilities, and that the operations will be conducted only during the day, under visual meteorological conditions (VMC), within visual line of sight (VLOS) of the Pilot in Command (PIC) with the assistance of a visual safety observer (VO).

1. Proximity of Airports/Populated Areas

The sUAS will not operate in Class B, C, or D airspace without written approval from the FAA. The sUAS will not operate within 5 nautical miles of the geographic center of a non-towered airport. Flight within these boundaries will be ensured further through the use of a pre-programed geofence within the sUAS's software. Further, the sUAS's flight operations will be monitored at all times by both the PIC and VO on the ground and will be in compliance with public safety requirements, so as to prevent access to the restricted areas of operation.

2. Visual Line-of-Sight

The sUAS will at all times be flown only in the daylight under VMC within VLOS of the PIC with the further assistance of a VO with whom the PIC will have the ability for direct and continuous verbal communications within audible range of each other. So as to ensure that the flight operations remain within the PIC's VLOS and prescribed flight boundaries and deconflict with objects in the air and on the ground. Thus, pursuant to the FAA's Interim Operational Approval Guidelines for UAS the proposed operations provide an approved method of control and collision avoidance to satisfy the "see and avoid" requirement of 14 C.F.R. § 91.113:

> While considerable work is ongoing to develop a certifiable "detect, sense, and avoid" system, no current solution exists. Compliance with the "see and

[2] *See e.g.* 49 USC §44711(a) ((1) prohibiting operations without airworthiness certificate; (2) prohibiting serving as airman without airman's certificate; (5) prohibiting commercial operations in violation of regulations); 49 USC §44704 (issuance of airworthiness certificate); 14 C.F.R. §91.203 (a)(1) (carry airworthiness certificate)).

avoid" aspect of 14 C.F.R. 91.113, *Right-of-Way Rules: Except Water Operations*, becomes one of the primary issues in UAS operational approvals. As a result, alternate methods of compliance are required to accomplish the "see and avoid" function. See and avoid risk mitigation strategies are normally based on the use of visual observers or other methods of segregation.

Interim Operational Approval Guidance 08-01, *Unmanned Aircraft Systems Operations in the U.S. National Airspace System* (March 13, 2008) at 8. Only qualified and current PIC's and VOs, as provided in the FOPM, will be used.

3. Other Factors

a. sUAS Safety Systems

Including as noted above, the sUAS is replete with mechanisms to ensure safe operations and protect persons and property on the ground. In addition to having an experienced PIC and VO, the sUAS has a variety of inherent safety systems, including:

- Diagnostic and Continuous Self-Monitor
- Altitude Control System
- GPS aided flight control system
- Altitude and GPS Warning/Indicator
- Loss link/FailSafe Return to home protocol
- Speed Indicator

The sUAS is designed to continuously monitor component operations and inform the PIC and crew of certain critical flight performance parameters via a LED Control Board, as well as by sound. The sUAS further has a "FailSafe" function that directs the sUAS to automatically return to either the takeoff location or, when programed, a designated waypoint, upon disruption of the system's control/communications link

b. Flight Operations and Procedures Manual

To ensure consistent safety operations, AIP has developed a detailed Flight Operations and Procedures Manual (FOPM). Based on AIP's extensive experience, procedures and notices provided by the sUAS manufacturer, and guidance the FAA has provided to obtain exemption under Section 333. *See AIP's FOPM (confidential document)*.

In seeking this exemption, AIP proposes to operate the sUAS(s) without having a certificate of airworthiness issued by the FAA, 14 C.F.R. Part 21., and upon consideration of the size, weight, speed, operational capability, and proximity to airports and populated areas of the particular sUAS. In all cases, an analysis of these criteria demonstrates that the sUAS(s) operated without an airworthiness certificate, in the restricted environment and under the conditions proposed will be at least as safe, or safer, than a conventional aircraft (fixed wing or rotorcraft) operating with an airworthiness certificate without the restrictions and conditions proposed.

AIP proposes to operate the sUAS(s) pursuant to the following specific operating limitations, as also addressed in the FOPM:

1. The sUAS shall weigh less than 55 lbs..
2. The sUAS shall be marked with an identification (N-Number) in accordance with 14 C.F.R. § 45.23, such markings to be as large as practicable pursuant to 14 C.F.R. § 45.29(f), and identified by a serial number registered in accordance with 14 C.F.R. Part 47.
3. Flight operations shall only be conducted within the designated "Closed Set" and operated 500 feet away from non-participating persons. This distance may be reduced to no less than 200 feet if it would not adversely affect safety.
4. The sUAS shall only be operated at or below 400 feet AGL.
5. The sUAS shall only be operated at or below 50 knots.
6. The sUAS shall at all times be operated within the VLOS of the PIC.
7. All operations will use a visual observer (VO).
8. The PIC and VO shall at all times be able to communicate within audible range of each other.
9. Prior to performing any flight operations, the PIC and VO shall have successfully completed a qualifying process, as provided in the Flight Operations and Procedures Manual (FOPM).
10. Prior to performing any flight operations, a flight demonstration administered by an operator-qualified PIC and provided in the FOPM, shall be performed and successfully completed. Documentation of such demonstration shall be made in the aircraft records and such records shall be made available to the Administrator upon request.
11. The sUAS shall only be operated during daylight hours (not at night, as defined in 14 C.F.R. § 1.1) under visual meteorological conditions (VMC). No operations shall be performed under special visual flight rules (SVFR).
12. The sUAS shall 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.
13. The sUAS shall at all times remain clear and yield the right of way to all other manned operations and activities (*e.g.* gliders, ultralights, parachutes).
14. The radio frequency spectrum used for operation and control of the sUAS shall comply with the requirements of the Federal Communications Commission (FCC) or other appropriate government oversight agency.
15. Any time the sUAS is operating, all documents required under 14 C.F.R. § 91.9 and § 91.203 shall be available to the PIC at the GCS. Such documents shall be made available to the Administrator or any law enforcement official upon request.
16. The sUAS shall not be operated by the PIC from any moving vehicle or device.
17. The sUAS shall not be operated directly over any person, except authorized and consenting personnel involved in the flight/filming operations, below an altitude that is hazardous to persons or property on the ground in the event of a sUAS failure or emergency.
18. The sUAS shall at all times be operated to ensure a safe distance away from all participating and non-participating personnel.
19. Aside from takeoff and landing, the distance from participating persons shall be operated at least 100 feet away, pursuant to the operator's manual. This distance may be reduced to no less than 30 feet if it would not adversely affect safety and such person provides his/her prior consent. Because these procedures are specific to participating

persons, no further FSDO or aviation safety inspector approval is necessary for reductions to the distances specified in the petitioner's manuals. This is consistent with the manned aircraft procedures described in FAA Order 8900.1, V3, C8, S1 Issue a Certificate of Waiver for Motion Picture and Television Filming. The Administrator has already determined that these same operating limitations and procedures provide an equivalent level of safety to those regulations for which AIP seeks exemption pursuant to this Petition and, accordingly, has previously granted exemptions in circumstances similar, in all material respects, to those presented herein. *See e.g.* Exemption Nos. 11062 (Astraeus Aerial), 11063 (Snaproll Media LLC), 11064 (RC Pro Productions Consulting, dba Vortex Aerial), 11065 (HeliVideo Productions, LLC), 11066 (Aerial MOB, LLC) and 11067 (Pictorvision Inc.)

20. AIP ensures that non-participants are not allowed within 500 feet of the area except those consenting to be involved and necessary for the filming production. This provision may be reduced to no less than 200 feet if it would not adversely affect safety. The Administrator has already determined that these same operating limitations and procedures provide an equivalent level of safety to those regulations for which AIP seeks exemption pursuant to this Petition and, accordingly, has previously granted exemptions in circumstances similar, in all material respects, to those presented herein. *See e.g.* Exemption Nos. 11062 (Astraeus Aerial), 11063 (Snaproll Media LLC), 11064 (RC Pro Productions Consulting, dba Vortex Aerial), 11065 (HeliVideo Productions, LLC), 11066 (Aerial MOB, LLC) and 11067 (Pictorvision Inc.)
21. The duration of each flight shall not exceed 30 minutes, or with 20% battery power remaining, whichever occurs first.
22. The sUAS shall not be operated with any inoperative flight-critical systems or equipment.
23. Prior to each flight the PIC shall inspect the sUAS, including for any inoperable components, items or equipment, to ensure the sUAS is in a condition for safe flight. If the inspection reveals a condition that affects safe operations, the sUAS shall not be operated until the necessary maintenance has been performed and the sUAS is found to be in a condition for safe flight. Any discrepancies and all maintenance or alterations shall be documented in the aircraft records, such records to be made available to the Administrator upon request.
24. Any sUAS that has undergone maintenance or alterations that affect the sUAS operation or flight characteristics, e.g. replacement of a flight critical component, shall undergo a functional test flight in accordance with the FOPM. The operator shall make an entry in the sUAS record of such test flight.
25. Record of the sUAS maintenance, preventive maintenance, alterations, status of replacement/overhaul component parts, and the total time in service of the sUAS shall be documented and maintained in accordance with the FOPM.
26. Except as may be designated otherwise for FailSafe operations, the sUAS shall take off and land at a predetermined location next to the PIC.
27. Upon loss of communication or GPS signal, the sUAS shall return to a predetermined location next to the PIC and land.
28. In the event of an emergency or unanticipated obstacle to planned operations, the sUAS operation shall be aborted and the sUAS, if airborne, shall return to a predetermined location next to the PIC and land.
29. The PIC shall possess at least a private pilot certificate and at least a current

third-class medical certificate, and prior to operations shall have met the FAA's currency and recency of experience requirements.

30. Prior to operations, the PIC shall have accumulated and logged (in a manner consistent with 14 C.F.R. § 61.51(b)) a minimum of 200 flight cycles and 25 hours of total time as a sUAS rotorcraft pilot and at least ten hours as a sUAS pilot with a similar sUAS type, such log of which shall be made available to the Administrator upon request. Prior to operations, the PIC shall have accumulated and logged (in a manner consistent with 14 C.F.R. § 61.51(b)) a minimum of five flight hours as a sUAS pilot operating the make and model of sUAS to be used for operations under the exemption and three take-offs and three landings in the preceding 90 days, such log of which shall be made available to the Administrator upon request.
31. The sUAS shall be maintained in accordance with the manufacturer's User Manual, including any amendments or updates thereto. All amendments or updates shall be tracked and a record of such amendments or updates shall be maintained and made available to the Administrator upon request.
32. All maintenance to be performed on the sUAS shall be performed by a technician qualified pursuant to the criteria provided in the FOPM.
33. The sUAS shall comply with all manufacturer safety bulletins.
34. The operator shall follow the manufacturer's sUAS aircraft/component, maintenance, overhaul, replacement, inspection and life limit requirements, as provided in the FOPM.
35. Prior to conducting any operations, the operator shall obtain a Certificate of Waiver or Authorization (COA). Pursuant to such COA, operator shall request of a Notice to Airman (NOTAM) not more than 72 hours in advance, but not less than 48 hours prior to the operation.
36. At least three days before scheduled operations, operator shall submit a written Plan of Activities to the local Flight Standards District Office (FSDO) with jurisdiction over the area of proposed operations, such submission of which may be waived with the concurrence of the FSDO. If required by the FSDO to be submitted, the Plan of Activities shall include: dates and times for all flights; operator's and on-scene flight operator's name and phone number; sUAS's N-number; PIC's name and certificate number; statement that the operator has obtained permission from property owners and/or local officials to conduct the operations (list of those who gave permission to be made available upon request); description of the planned flight activity, including, as applicable, maps or diagrams of the area, city, town, county and/or state over which the operation will be conducted, and the altitudes essential to accomplish the operation; signature of the exemption holder or representative.
37. The sUAS shall not operate in Class B, C, or D airspace without written approval from the FAA.
38. The sUAS shall not operate within 5 nautical miles of the geographic center of a non-towered airport unless a letter of agreement with that airport's management is obtained, such letter to be made available to the Administrator upon request, and the operation is conducted in accordance with a NOTAM as required by the operator's COA.
39. Any incident, accident or flight operation that transgresses the lateral or vertical boundaries of the operational area as defined by the applicable COA shall be reported to the FAA's sUAS Integration Office within 24 hours. Accidents shall also be reported to the National Transportation Safety Board (NTSB). Further flight

operations shall not be conducted until the incident, accident or transgression is reviewed by sUAS Integration Office and authorization to resume operations is provided.

40. The sUAS shall be operated pursuant to the FOPM, such manual to be made available to the Administrator upon request. If a discrepancy exists between the FOPM and the conditions and limitations directed by the Administrator in granting the exemption, the conditions and limitation in the exemption shall take precedence and be followed.

The Administrator has already determined that these same operating limitations and procedures provide an equivalent level of safety to those regulations for which AIP seeks exemption pursuant to this Petition and, accordingly, has previously granted exemptions in circumstances similar, in all material respects, to those presented herein. *See e.g.* Exemption Nos. 11062 (Astraeus Aerial), 11063 (Snaproll Media LLC), 11064 (RC Pro Productions Consulting, dba Vortex Aerial), 11065 (HeliVideo Productions, LLC), 11066 (Aerial MOB, LLC) and 11067 (Pictorvision Inc.).

c. Privacy

All flights will occur over controlled access property with the property owner's prior consent and knowledge. Filming will be of people who have also consented to being filmed or otherwise have agreed to be in the area where filming will take place.

d. Physical Security

In order to ensure its safe and proper use, AIP will be the only operator of the sUAS and the sUAS will at all times remain in AIP's custody.

4. Lack of Threat to the NAS, Public, or National Security

The sUAS(s) being flown pose significantly less of a threat than the helicopters and fixed wing aircraft now being employed because they are a fraction of the size, carry no flammable fuel, and do not carry crew or passengers. This is in stark contrast to conventional aircraft that carry flammable fuel, carry passengers and crew, and operate in a much larger area.

E. AIP's Operations Pursuant to This Petition Qualify for Exemption Under Section 44701.

Granting AIP's request for exemption would benefit the public and have no adverse effect on safety. Accordingly, AIP's operations pursuant to this Petition also qualify for an exemption from the FAA's related safety regulations under Section 44701.

1. Public Interest Benefits

sUASs serves as a safe, efficient, and economical alternative to manned aircraft traditionally used to conduct aerial photography for the motion picture and television industry. No pilot or crew need be airborne, thereby providing for superior safety to persons and property in the air and on the ground than that provided by manned aircraft performing the

same operations. Granting the exemption would also reduce the number of manned aircraft in the NAS and, as a result, reduce the environmental impact of such operations.

2. No Adverse Safety Effects

Operations pursuant to the limitations and guidelines addressed herein and in the FOPM will provide an equivalent or even higher level of safety to the regulations from which AIP seeks exemption. The FAA has previously determined that granting AIP's petition under circumstances similar, in all material respects, to those presented herein (e.*g.* Exemption Nos. 11062 (Astraeus Aerial), 11063 (Snaproll Media LLC), 11064 (RC Pro Productions Consulting, dba Vortex Aerial), 11065 (HeliVideo Productions, LLC), 11066 (Aerial MOB, LLC) and 11067 (Pictorvision Inc.).

For all of these reasons, AIP's operations pursuant to this Petition also qualify for an exemption under Section 44701.

F. Exemptions Sought By AIP And Reasons For The Requested Relief

Pursuant to Section 333, AIP seeks an exemption from the requirements of 14 C.F.R. §§ 45.23(b), 61.113(a) and (b), 91.7(a), 91.9(b)(2), 91.103(b)(2), 91.109(a), 91.119(c), 91.121(a)(1)(iii), 91.151(b), 91.203(a) and (b), 91.405(a), 91.407(a)(1), 91.409(a)(2), 91.417(a) and (b), as well as the requirement to have a certificate of airworthiness under 14 C.F.R. Part 21, Subpart H.

1. 14 C.F.R. 21, Subpart H. Airworthiness Certificate.

AIP seeks an exemption from 14 C.F.R. 21, Subpart H. Part 21 sets the procedural requirements for airworthiness certification under Section 44704. Both Section 333 and Section 44701 (49 U.S.C.§44701(f) (Exemptions.)) authorize the FAA to exempt sUAS from the requirement of airworthiness certification under Part 21 when, upon consideration of its size, weight, speed, operational capability, and proximity to airports and populated areas, it can be shown that the sUAS does not create a hazard to users of the NAS or the public or pose a threat to national security.

Exemption from the airworthiness certification requirement under 14 C.F.R. Part 21 and Subpart H render inapplicable those requirements founded or conditioned on having obtained such certification, including, without limitation, 91.7(a) (aircraft to be in airworthy condition), 91.203(a) (airworthiness and aircraft registration certificates to be carried within aircraft), 91.203(b) (airworthiness certificate to be displayed at cabin or cockpit entrance), 91.9(b) (flight manual/other approved manual material to carried within aircraft), 45.23(b) (display of marks for category aircraft), 91.405(a) (maintenance required), 91.407(a)(1) (return to service after maintenance or alteration), 91.409(a)(2) (airworthiness and annual inspection), 91.417(a) and (b) (maintenance records).

2. Section 91.7(a). Civil Aircraft Airworthiness.

Either finding that AIP meets the Section 333 criteria or exemption from the airworthiness certification requirement under 14 C.F.R. Part 21 renders subsection 91.7(a) inapplicable.

Section 91.7, entitled *Civil aircraft airworthiness*, subsection (a) states (emphasis added): "No person may operate a civil aircraft unless it is in an *airworthy condition*." To the extent the subsection 91.7(a) may be deemed to apply to the sUAS(s), however, AIP seeks an exemption from the subsection because, assuming exemption from Part 21, there will be no FAA standard by which such a determination of airworthiness can be made. Nonetheless, given the limitations and procedures, as contained herein, the FOPM, and the sUAS's User Manual(s) for maintaining the aircraft and checking it before each flight to ensure that it is in peak operating condition, an equivalent level of safety will be provided.

3. Sections § 91.203(a) and (b). Carrying Aircraft Certification and Registration.

Either finding that AIP meets the Section 333 criteria or exemption from the airworthiness certification requirement under 14 C.F.R. Part 21 renders subsections 91.203(a)(1) and 91.203(b) inapplicable.

Section 91.203, entitled *Civil aircraft: Certifications required*, subsections (a) and (b) state whether certain required documents be kept at an unmanned aircraft's control station," the intent of 91.203 is fulfilled if the required documents are kept at the GCS. However, if AIP is either found to meet the Section 333 criteria or granted an exemption under CFR 21 Subpart 4, AIP will not have an airworthiness certificate. This renders 91.203(a)(1) and 91.203(b) inapplicable.

Therefore, AIP proposes the following conditions and limitations to its request for exemption from subsections 91.203(a) and (b):

> Documents required by subsections 91.203(a) and (b) shall be maintained at the ground control station, where they are readily available to the PIC or crew any time the UAS is operating. Any such documents shall be made available to the FAA upon request.

4. Section 91.9(b)(2). Flight Manual In Aircraft.

Section 91.9, entitled *Civil aircraft flight manual, marking, and placard requirements*, subsection (b)(2) states (emphasis added):

> (b) No person may operate a U.S. registered civil aircraft
> (2) For which an Airplane or Rotorcraft Flight Manual is *not* 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 the FAA's chief counsel memorandum subject "Interpretation regarding whether certain required documents be kept at an unmanned aircraft's control station," the intent of 91.203 is fulfilled if the required documents are kept at the GCS. However, if AIP is either found to meet the Section 333 criteria or granted an exemption under CFR 21 Subpart 4, AIP will not have an airworthiness certificate. This renders 91.203(a) and 91.203(b) inapplicable.

Therefore, AIP proposes the following conditions and limitations to its request for exemption from subsection 91.9(b):

> All documents required by subsection 91.9(b) shall be maintained at the ground control station, where they are readily available to the PIC any time the UAS is operating. Any such documents shall be made available to the FAA upon request.

5. Section 45.23(b). Aircraft Marking.

Either finding that AIP meets the Section 333 criteria or exemption from the airworthiness certification requirement under 14 C.F.R. Part 21 renders subsection 45.23(b) inapplicable.

Section 45.23, entitled *Display of marks; general*, subsection (b) states (emphasis added):

> (b) 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.

To the extent the subsection 45.23(b) may be deemed to apply to the sUAS(s), AIP seeks an exemption from the subsection (*i.e.,* that the word "restricted" be displayed near each entrance to the cabin, cockpit, or pilot station, and also that any such marking be not less than 2 inches high) because the sUAS is unmanned, and has no cabin, cockpit, pilot station, or entrances thereto, and its frame is of insufficient size to allow for lettering greater than ¾ of an inch high. Thus marking the sUAS as required by this subsection would not be possible.

An equivalent level of safety can be provided instead by marking the sUAS with lettering as large as practicable (14 C.F.R. § 45.29(f)) on its largest available surface so as to permit such marking to be displayed to pilot, crew, and others both when the sUAS is on the ground and airborne.

6. Sections 91.405(a), 91.407(a)(1), 91.409(a)(2), 91.417(a) and (b). Maintenance inspections and recording.

These regulations require that an aircraft operator or owner "shall have that aircraft inspected as prescribed in subpart E of this part and shall between required inspections, except as provided in paragraph (c) of this section, have discrepancies repaired as prescribed in part 43 of this chapter...," and others shall inspect or maintain the aircraft in compliance with Part 43.

Given that these section and Part 43 apply only to aircraft with an airworthiness certificate, these sections will not apply to the applicant. Maintenance will be accomplished by the operator pursuant to the flight manual and operating handbook as referenced in the Manual.(See Sections L and Q) An equivalent level of safety will be achieved because these small UASs are very limited in size and will carry a small payload and operate only in

restricted areas for limited periods of time. If mechanical issues arise the sUAS can land immediately and will be operating from no higher than 400 feet AGL. As provided in the Manual, the operator will ensure that the sUAS is in working order prior to initiating flight, perform required maintenance, and keep a log of any maintenance performed. Moreover, the operator is the person most familiar with the aircraft and best suited to maintain the aircraft in an airworthy condition to provide the equivalent level of safety.

7. Section 61.113(a) and (b). Private pilot privileges and limitations: Pilot in command.

In general, subsections 61.113 (a) and (b) prohibit a private pilot from conducting commercial operations. AIP seeks exemption from the subsections because the sUAS will not carry a pilot, passengers or property (other than a camera). Unlike a conventional aircraft that carries the pilot and passengers, the sUAS is remotely controlled with no living thing on board. The area of operation is controlled and restricted, and all flights are planned and coordinated in advance as set forth in the Manual. The level of safety provided by the requirements included in the Manual exceeds that provided by a single individual holding a commercial pilot's certificate operating a conventional aircraft. The risks associated with the operation of the sUAS are so diminished from the level of risk associated with commercial operations contemplated by Part 61 when drafted, that allowing operations of the sUAS as requested with a private pilot as the PIC exceeds the present level of safety achieved by 14 C.F.R. §61.113 (a) & (b).

8. Section 91.103(b)(2). Preflight action.

AIP seeks an exemption from 14 C.F.R. 91.103(b)(2). Section 91.103, entitled *Preflight action*.

Subsection 91.103(b)(2) requires that the PIC take certain preflight actions as provided in an approved flight manual or other information appropriate to the aircraft to ensure the safety of the planned operations. As discussed, AIP pursuant to this Petition, however, will not be operating the sUAS pursuant to a FAA-approved rotorcraft flight manual or other such materials recognized to be appropriate to the aircraft and, therefore, will need an exemption from this subsection. An equivalent level of safety will be provided instead by requiring the PIC before each flight to following the flight planning procedures set forth in the FOPM, to include checking the current and forecasted weather and sUAS's performance data in view of the launch location elevation, temperature, wind speed and direction, and aircraft gross weight, as provided in the FOPM.

9. Section 91.109(a). Flight instruction.

AIP seeks an exemption from 14 C.F.R. 91.109(a). Section 91.109, entitled *Flight instruction; Simulated instrument flight and certain flight tests*, subsection (a) states in relevant part:

> (a) No person may operate a civil aircraft (except a manned free balloon) that is being used for flight instruction unless that aircraft has fully functioning dual controls.

To the extent the sUAS may be used to train or qualify pilots, AIP seeks exemption

from subsection 91.109(a) because AIP's sUAS(s) are by definition unmanned aircraft(s), and are not designed to have on board flight controls, let alone fully functional dual controls, to be used by pilots of manned aircraft as required by the regulation. Instead, the sUAS is remotely controlled via radio frequency (RF) communications between the controller unit, operated by the PIC located at the GCS. Any training/qualifying, therefore, would not use or require a dual set of controls. Rather, in lieu of formalized training, AIP evaluates its PIC's qualifications based on their experience with the sUAS and flight demonstration, as provided in the FOPM.

An equivalent or even higher level of safety can be provided instead by using an unmanned aircraft operated by a PIC who at all times is in control of the sUAS using the controller unit located at the GCS. Neither student nor instructor need be airborne, thereby providing for superior safety to persons and property in the air and on the ground than that provided by manned aircraft performing the same instructional operations.

The FAA has approved exemptions for flight instruction without fully functional dual controls (*e.g.* Exemption Nos.5778K & 9862A).

10. Section 91.119(c). Minimum safe altitudes.

AIP seeks an exemption from 14 C.F.R. 91.119(c). Section 91.119, entitled Minimum safe altitudes.

Section 91.119(c) establishes safe altitudes for operation of civil aircraft over other than congested areas. AIP seeks exemption from subsection 91.119(c) because, pursuant to this Petition, the sUAS will at all times be operated below 400 feet AGL.

An equivalent or even higher level of safety can be provided instead by, as provided herein, operated below 400 feet AGL, so as to deconflict with manned vehicles operating above 500 feet AGL, within the VLOS of the PIC with the assistance of a VO so as to ensure the safety of and deconfliction with any persons or property in the air and on the ground, including participating and nonparticipating personnel.

11. Section 91.121(a)(1)(iii). Altimeter settings.

AIP seeks exemption from subsection 91.121(a)(1)(iii) because the sUAS does not use or have on board a typical barometric altimeter as contemplated by the regulation. Instead, the sUAS continuously downlinks GPS altitude information from the sUAS to the PIC at the GCS to maintain altitude.

An equivalent level of safety will be provided instead by operating the sUAS below 400 feet AGL within the VLOS of the PIC (with the assistance of a VO) with GPS altitude information downlinked from the sUAS to the PIC to maintain altitude and ensure safety. Prior to each flight, a zero altitude/AGL will be established at the launch site shown on the GPS altitude indicator and confirmed for accuracy by the PIC.

12. Section 91.151(b). Fuel requirements for flight in VFR conditions.

AIP seeks an exemption from 14 C.F.R. 91.151(b). Section 91.151(b), entitled *Fuel requirements for flight in VFR conditions*, states (emphasis added):

> **(b)** No person may begin a flight in a rotorcraft 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, to fly *after that for at least 20 minutes*.

Though the sUAS is unmanned, and thus would not begin a flight with a person in it as the regulation contemplates, to the extent the regulation applies, AIP would need an exemption from this subsection because the battery powering the sUAS only provides for approximately 30 minutes of flight, and therefore would not meet the 30 minute reserve required by the regulation. Given the limitations on the sUAS's proposed flight area and the location of its proposed operations within a predetermined area, a longer time frame for flight in VFR conditions is reasonable.

G. Conclusion

Accordingly, as set forth above, Aerial Imaging Productions, LLC seeks an exemption pursuant to 14 C.F.R. § 11.61 and Section 333 of the FAA Modernization and Reform Act of 2012, to permit safe operation of AIP's sUAS(s) (identified in the FOPM) commercially, without an airworthiness certificate, for the special purpose of conducting aerial imaging operations. By granting this Petition, the FAA Administrator will be fulfilling the Congressional mandate of Section 333 of the FAA Modernization and Reform Act of 2012 to expedite approval of operations of certain sUAS in the NAS, while also advancing the interests of the public.

WHEREFORE, in accordance with the Federal Aviation Regulations and the FAA Modernization and Reform Act of 2012, Section 333, Aerial Imaging Productions, LLC respectfully requests that the Administrator grant this Petition for an exemption from the requirements of 14 C.F.R. §§ 45.23(b), 61.113(a) and (b), 91.7(a), 91.9(b)(2), 91.103(b)(2), 91.109(a), 91.119(c), 91.121(a)(1)(iii), 91.151(b),91.203(a) and (b), 91.405(a), 91.407(a)(1), 91.409(a)(2), 91.417(a) and (b), as well as the requirement to have a certificate of airworthiness under 14 C.F.R. Part 21, Subpart H.

Dated: February , 2015
Respectfully submitted,

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