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

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

August 26, 2015

Exemption No. 12607
Regulatory Docket No. FAA–2015–1913

Mr. Jesse Slesar
Sky Definition Photography
1704 East Dalke
Spokane, WA 99208

Dear Mr. Slesar:

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 May 13, 2015, you petitioned the Federal Aviation Administration (FAA) for an exemption. The petitioner requested to operate an unmanned aircraft system (UAS) to conduct aerial imaging, photography, and videography.

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 Phantom 2 and Syndrone.

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[1]. 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, Mr. Jesse Slesar 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

[1] Aerial data collection includes any remote sensing and measuring by an instrument(s) aboard the UA. Examples include imagery (photography, video, infrared, etc.), electronic measurement (precision surveying, RF analysis, etc.), chemical measurement (particulate measurement, etc.), or any other gathering of data by instruments aboard the UA.

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, Mr. Jesse Slesar 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 Phantom 2 and Syndrone when weighing less than 55 pounds including payload. Proposed operations of any other aircraft will require a new petition or a petition to amend this exemption.

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

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

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

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

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

7. This exemption and all documents needed to operate the UAS and conduct its operations in accordance with the conditions and limitations stated in this grant of exemption, are hereinafter referred to as the operating documents. The operating documents must be accessible during UAS operations and made available to the

Administrator upon request. If a discrepancy exists between the conditions and limitations in this exemption and the procedures outlined in the operating documents, the conditions and limitations herein take precedence and must be followed. Otherwise, the operator must follow the procedures as outlined in its operating documents. The operator may update or revise its operating documents. It is the operator's responsibility to track such revisions and present updated and revised documents to the Administrator or any law enforcement official upon request. The operator must also present updated and revised documents if it petitions for extension or amendment to this grant of exemption. If the operator determines that any update or revision would affect the basis upon which the FAA granted this exemption, then the operator must petition for an amendment to its grant of exemption. The FAA's UAS Integration Office (AFS−80) may be contacted if questions arise regarding updates or revisions to the operating documents.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

30. At least 3 days before aerial filming, the operator of the UAS affected by this exemption must submit a written Plan of Activities to the local Flight Standards District Office (FSDO) with jurisdiction over the area of proposed filming. The 3-day notification may be waived with the concurrence of the FSDO. The plan of activities must include at least the following:
    a. Dates and times for all flights;
    b. Name and phone number of the operator for the UAS aerial filming conducted under this grant of exemption;
    c. Name and phone number of the person responsible for the on-scene operation of the UAS;
    d. Make, model, and serial or N−Number of UAS to be used;
    e. Name and certificate number of UAS PICs involved in the aerial filming;
    f. A statement that the operator has obtained permission from property owners and/or local officials to conduct the filming production event; the list of those who gave permission must be made available to the inspector upon request;
    g. Signature of exemption holder or representative; and
    h. A description of the flight activity, including maps or diagrams of any area, city, town, county, and/or state over which filming will be conducted and the altitudes essential to accomplish the operation.

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

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

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

Sincerely,

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

Enclosures

SKY DEFINITION PHOTOGRAPHY

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May 13, 2015

U.S. Department of Transportation Docket Management System

1200 New Jersey Avenue, SE Washington, DC 20590

RE: Exemption Request, under Section 333 of the FAA Modernization and Reform Act, from 14 CFR Part 21; 14 CFR 61.113(a); 14 CFR 91.7(a); 14 CFR 91.9(b)(2); 14 CFR 91.105; 14 CFR 91.119(c); 14 CFR 91.121; 14 CFR 91.151(a)(1); 14 CFR 91.203(a)(1); 14 CFR 91.203(b); 14 CFR 91.405(a); 14 CFR 91.407(a)(1); 14 CFR 91.409(a)(1) & (a)(2); 14 CFR 91.417(a) & (b).

Dear Sir or Madam:

I, Jesse Slesar, am writing pursuant to the FAA Modernization and Reform Act of 2012 and the procedures contained within 14 CFR Part 11 to request that I, Jesse Slesar, an owner and operator of a small unmanned aircraft system, be exempted from certain Federal Aviation Regulations ("FARs") listed in Table 1 in order to allow commercial operations of my small, unmanned aircraft system (sUAS) for aerial imaging, photography, and videography of properties and events.

Section [1] enumerates the regulations from which exemption is being requested in order to permit the operation of a small, lightweight sUAS under controlled conditions and in a predetermined and clearly bounded space for the purpose of aerial imaging, photography, and videography of properties and events. These regulations that pertain to the sUAS platform itself are further discussed in Section [2], along with additional measures to maintain the current level of safety. Section [4] discusses exemptions pertaining to the operator, and how any potential risks are mitigated by limiting operation to a trained, certificated pilot-in-command (PIC) with a visual observer (VO). Section [5] examines exemptions pertaining to flight operations and how safety will be maintained at an equivalent or higher level than current approaches by implementation of Standard Operating Procedures (SOP). Finally, Sections [6] and [7] include a summary for the Federal Register and concluding remarks, respectively.

With the platform, personnel, and procedures contained herein in place, as well any additional guidance from the FAA in consideration of this exemption, it is my strong belief that these sUAS operations will meet and exceed the current level of safety and environmental impact of larger scale manned aircraft that currently perform these functions. Approval of this exemption would thereby enhance safety, reduce environmental impact, and fulfill the responsibility of the Secretary of Transportation (the FAA Administrator) to "...establish requirements for the safe operation of such aircraft

systems in the national airspace system" pursuant to Section 333(c) of the FAA Modernization and Reform Act of 2012.

[1] REQUEST FOR EXEMPTION FROM CERTAIN PARTS OF 14 CFR

The applicant hereby petitions the Secretary of Transportation and Federal Aviation Administration for exemption to the below referenced (in Table 1) and, in Sections [3] to [5] more fully described, Federal Aviation Regulations that currently may apply to the commercial use of a small, unmanned aircraft system.

Table 1 - List of Requested Exemptions

Regulation & Part		Des
14 CFR	Part 21	Design, production, and airworthiness a
14 CFR	§ 61.113(a)	Private pilot privileges and limitations:
14 CFR	§ 91.7(a)	Civil aircraft airworthiness.
14 CFR	§ 91.9(b)(2)	Civil aircraft flight manual, marking, and
14 CFR	§ 91.105	Flight crewmembers at stations.
14 CFR	§ 91.119(c)	Minimum safe altitudes: General.
14 CFR	§ 91.121	Altimeter settings.
14 CFR	§ 91.151(a)(1)	Fuel requirements for flight in VFR con
14 CFR	§ 91.203(a)(1)	Civil aircraft: Certifications required.
14 CFR	§ 91.203(b)	Civil aircraft: Certifications required.
14 CFR	§ 91.405(a)	Maintenance required.
14 CFR	§ 91.407(a)(1)	Operation after maintenance, preventi
14 CFR	§ 91.409(a)(1)	Inspections.
14 CFR	§ 91.409(a)(2)	Inspections.
14 CFR	§ 91.417(a)	Maintenance records.
14 CFR	§ 91.417(b)	Maintenance records.

This exemption request is expressly submitted to fulfill Congress's goal in passing the FAA Modernization and Reform Act of 2012 (FMRA), Sections 333(a) through 333(c). This law directs the Secretary of Transportation to consider whether certain UAS may operate safely in the national airspace system before completion of the rulemaking called for under Section 332 of the same Act.

The Modernization and Reform Act of 2012 further states, if "the Secretary determines under [Section 333] that certain unmanned aircraft systems may operate safely in the national airspace system, the Secretary shall establish requirements for the safe operation

of such aircraft systems in the national airspace system." The applicant interprets this provision to place the duty on the Secretary to not only process applications for exemptions under Section 333, but for the Secretary to affirmatively craft conditions for the safe operation of sUAS, should it be decided that the conditions of this application do not fulfill the statutory requirements for approval.

Recently, the framework for precedent in this area has also been established with the granting of several exemptions on the grounds of Section 333, whereby safety to the national airspace system has been maintained. Some of these recent exemptions, which provide some obvious and apparent similarities to the current exemption request, are Exemption 11138 (Douglas Trudeau), Exemption 11062 (Astraeus Aerial), Exemption 11109 (Clayco, Inc), and Exemption 11110 (Trimble Navigation Ltd).

[2] RELATING TO THE SMALL, UNMANNED AIRCRAFT SYSTEM [3.1] OVERVIEW AND SUPPORTING INFORMATION

The applicant petitions herein to exempt operations with a Phantom 2 and Syndrones frame with Mikrokopter flight controller (the sUASs). The Phantom 2 and Syndrone are lightweight sUASs, they carry no people or combustible fuel, and have several built-in safety features in the event of flight emergencies. Based on the physical and safety features of the Phantom 2 and Syndrone, along with previous findings in Exemption 11138 (Douglas Trudeau), it is believed that this platform falls under the purview of Section 333, is able to meet or exceed acceptable safety levels, and is appropriate for exemption.

Lightweight, small UAS. The complete specifications and operating limits for the Phantom 2 can be found in the Phantom 2 User Manual, supplied as an attachment to this petition and the Syndrones frame and Mikrokopter flight controller can be found on their respective websites. However, it is instructive to highlight some of the more pertinent operational limits that bound the risk of usage of these sUASs

 Maximum dimension of the Phantom 2 is less than 23 inches, which counts the maximum diagonal distance including maximum swept area of the propellers and no less than 49 inches on the Syndrome.

 Maximum weight for the Phantom 2 Vision + configurations flown under this petition are less than 3 lbs with imaging sensors onboard and Maximum weight on the Syndrone is 30 lbs.

 Maximum speed for the Phantom 2 and Syndrone is 30 mph. In practice, neither sUASs are ever flown at maximum speeds for the requested application (see Section

[5.1]) as it is contrary to the objective of sharp photographs or smooth video. For reference, even at maximum speed, the momentum of the Phantom is comparable to a kicked soccer ball.

 Maximum flight time is limited to 20 minutes by available charge stored in the onboard battery.

 Exceptional agility is provided by yaw rates up to 200°/sec and 20 ft/sec climb rates. This agility allows both sUASs to be safely operated in smaller, less accessible spaces than could ever be imagined with conventional aircraft. Also, avoiding obstacles or responding to flight emergencies can be accomplished with significantly less standoff distance than is currently required for larger, manned aircraft.

No occupants and benign cargo. A significant risk mitigation is provided by virtue of the fact that the sUAS is inherently unmanned. Any risk of injury to people onboard the aircraft is completely eliminated. This provides a significant safety upgrade over current operations that use manned helicopters to provide similar services. Low flying helicopters near tree lines not only endanger occupants of the helicopter, but also people on the ground. The sUAS avoids the risk to occupants completely. Additionally, both are electric sUAS, the absence of a combustible fuel is an important factor in reducing risk to people and property on the ground should an accident occur.

Built-in safety features. Both sUASs have safety features to mitigate two of the most common malfunctions for sUAS – loss of communication with the base station and low battery levels.

 Both mitigate loss of communication (e.g., exceeding transmitter range, blocked RF signal, electrical malfunction) by incorporating GPS functionality. Both record the "home" GPS coordinates (set automatically on startup, verified during the preflight inspection). Then, if communication is lost during flight, the sUAS can hover in place to see if signal is restored or initiate a "Return to Home," returning to the "home" GPS coordinates and executing a landing there.

 If the battery reaches a critically low level, the "Return to Home" feature is also initiated. This feature returns the unit back to the "home" location and executes a landing before power is lost. This feature, and Standard Operating Procedures discussed in Section [4], mitigate one of the most tangible risks to sUAS – exhausting onboard battery charge that often leads to a crash.

 The sUAS also features a programmable maximum altitude and horizontal range to prevent accidental flight boundary excursions (limits set to 400 feet and 2000 feet, respectively).

 Finally, the sUAS includes software-defined “restricted areas” around airports where the

Neither will not be able to operate. This is supplemented by Standard Operating Procedures which further reduce operating areas, as discussed later.

[2.2] REQUESTED EXEMPTION FROM 14 CFR Part 21 AND 14 CFR §91.203(a)(1)

Text of Cited Regulation:

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. Each U.S. airworthiness certificate used to comply with this subparagraph (except a special flight permit, a copy of the applicable operations specifications issued under § 21.197(c) of this chapter, appropriate sections of the air carrier manual required by parts 121 and 135 of this chapter containing that portion of the operations specifications issued under § 21.197(c), or an authorization under § 91.611) must have on it the registration number assigned to the aircraft under part 47 of this chapter. However, the airworthiness certificate need not have on it an assigned special identification number before 10 days after that number is first affixed to the aircraft. A revised airworthiness certificate having on it an assigned special identification number, that has been affixed to an aircraft, may only be obtained upon application to an FAA Flight Standards district office.

Reason for Exemption: 14 CFR Part 21, Subpart H, establishes the procedural requirements for the issuance of airworthiness certificates as required by 14 CFR §91.203(a)(1). Given the small size, modest maximum speed, and limited operating area associated with the sUAS to be used by the applicant, an exemption from Part 21 and §91.203(a)(1) meets the requirements of an equivalent level of safety under Section 333 of the FAA Modernization and Reform Act of 2012. The Federal Aviation Act (49 USC §44701(f)) and Section 333 of the FMRA both authorize the FAA to exempt aircraft from the requirement of an airworthiness certificate, upon consideration of the size, weight, speed, operational capability, proximity to airports and populated areas, and operation within visual line of sight of the sUAS. In all cases, an analysis of these criteria

demonstrates that the sUAS operated without an airworthiness certificate, in the limited environment and conditions proposed herein, will be at least as safe, or safer, than a conventional rotorcraft aircraft operating with an airworthiness certificate. The applicant respectfully requests confirmation that this sUAS does not require airworthiness certification, as allowed under Section 333 of the FMRA.

Mitigation Basis: Safety of the general public and the national airspace will be preserved by the safety features of the sUAS platform described in [2.1], the training and certification of the operator described in [3.1], and the additional operational limitations discussed in [4] and supplemented by the Standard Operating Procedures attached to this petition.

Previous clarification that, in relation to a similar sUAS, Part 21 Subpart H was not applicable, and therefore the sUAS does not require an airworthiness certification, was granted in Exemption 11138 (Trudeau).

[2.3] REQUESTED EXEMPTION FROM 14 CFR §91.203(b)

Text of Cited Regulation:

> (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.

Reason for Exemption: It is believed that, per the request for relief in [2.2] of this petition and recent rulings by the FAA (cf., Exemptions 11138, 11062, and 11110), that an airworthiness certificate is not required for this sUAS. The cited portion of § 91.203(b) seemingly does not allow for aircraft that have been determined by the FAA to not need an airworthiness certificate. Thus, if this sUAS is decided not to need an airworthiness certificate (either under 14 CFR § 91.203(a)(1) or § 91.715), a waiver to 14 CFR §91.203(b) is being requested.

Mitigation Basis: Safety of the general public and the national airspace will be preserved by the safety features of the sUAS platform described in [3.1], the training and certification of the operator described in [4.1], and the additional operational limitations discussed in [5] and supplemented by the Standard Operating Procedures attached to this petition.

Previous clarification that, in relation to a similar sUAS, Part 21 Subpart H was not applicable, and therefore the sUAS does not require an Airworthiness certification, was granted in Exemption 11138 (Trudeau).

[2.4] REQUESTED EXEMPTION FROM 14 CFR §91.7(a) Text of Cited Regulation:

(a) No person may operate a civil aircraft unless it is in an airworthy condition.

Reason for Exemption: This regulation requires that no person operate an aircraft unless it is in an airworthy condition. However, should [2.2] of this exemption be granted, there will be no airworthiness certificate issued to this aircraft. Therefore, no FAA regulatory standard will exist for determining airworthiness to fulfill this requirement. Therefore, relief from §91.7(a) is requested.

Mitigation Basis: An equivalent level of safety will be provided by the conflation of several factors. These factors include the low weight of the sUAS (cf., [2.1]), the modest maximum speed of the sUAS (cf., [2.1]), operation within the limits defined in [4.1] and the attached Standard Operation Procedures, and the successful completion of a pre-flight checklist before every flight. The pre-flight checklist has been crafted by the trained applicant specifically for these sUASs and has been iterated over the course of dozens of recreational flights. The pre-flight checklist can be found as an attachment to this petition and includes pre-flight checks of weather, battery levels, propeller structural integrity, other traffic in the area, and potential obstacles within the flight area (physical or electromagnetic).

The rigorous pre-flight inspection is to allow the PIC to determine, before every flight, whether the sUAS is in a condition safe for flight per §91.7(b). Relief from §91.7(b) is therefore not expected to be necessary, nor is it being requested as part of this petition.

Relief from §91.7(a) has previously been granted to similar petitions, for example Exemption 11138 (Douglas Trudeau) and Exemption 11110 (Trimble Navigation Ltd).

[2.5] REQUESTED EXEMPTION FROM 14 CFR §91.9(b)(2)

Text of Cited Regulation:

(b) No person may operate a U.S.-registered civil aircraft

(1) 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 or the manual provided for in § 121.141(b); and

(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.

Reason for Exemption: As the sUAS will not be certificated under Part 21, a Flight Manual is not required by §21.5. Therefore, §91.9(b)(2) requires that there be available, in the aircraft, a "current approved Rotorcraft Flight Manual, approved manual material, markings, and placards, or any combination thereof." This exemption is requested for three reasons. The first reason derives from the fact that there is no officially FAA-approved manual for this system, making the requirement inapplicable. Second, the inherent small size of the platform makes stowage of such material impossible onboard the aircraft as required by §91.9(b)(2). Third, stowage of such a manual onboard the aircraft would not allow the PIC access to it during flight, causing a potential safety concern. Therefore, relief is requested for §91.9(b)(2).

Mitigation Basis: Safety of the general public and the national airspace will be preserved by best capturing the intent of the original regulation as it pertains to the sUAS at hand. The manufacturer's User Manual (attached) will be used in place of an approved Flight Manual. The manufacturer's User Manual captures pertinent information for safe flight and operation, including general performance data, proper takeoff/landing procedures, and procedures for emergency situations such as loss of a communications link. Stowage of this manual onboard the aircraft is both impossible and believed to be contrary to the intent of the regulation, as the PIC would not be able to access it during flight if it were onboard the aircraft. Therefore, the manufacturer's User Manual will be stored with the sUAS control station such that it is available to the PIC, consistent with the findings from FAA Memorandum "Interpretation regarding whether certain required documents may be kept at an UA's control station" dated 8 August 2014.

[2.6] REQUESTED EXEMPTION FROM 14 CFR §91.121

Text of Cited Regulation:

(a) Each person operating an aircraft shall maintain the cruising altitude or flight level of that aircraft, as the case may be, by reference to an altimeter that is set, when operating

(1) Below 18,000 feet MSL, to

(i) The current reported altimeter setting of a station along the route and within 100 nautical miles of the aircraft;

(ii) If there is no station within the area prescribed in paragraph (a)(1)(i) of this section, the current reported altimeter setting of an appropriate available station; or

(iii) In the case of an aircraft not equipped with a radio, the elevation of the departure airport or an appropriate altimeter setting available before departure; or

(2) At or above 18,000 feet MSL, to 29.92″ Hg.

(b) The lowest usable flight level is determined by the atmospheric pressure in the area of operation as shown in the [table omitted]

(c) To convert minimum altitude prescribed under §§ 91.119 and 91.177 to the minimum flight level, the pilot shall take the flight level equivalent of the minimum altitude in feet and add the appropriate number of feet specified below, according to the current reported altimeter setting.

Reason for Exemption: This regulation requires each person operating an aircraft to maintain cruising altitude by reference to an altimeter that is set to the elevation of the departure airport or an appropriate altimeter setting available before departure. The sUAS may not have a barometric altimeter, but rather a GPS altitude readout from the flight system telemetry. Therefore, an exemption may be needed.

Mitigation Basis: An equivalent level of safety will be achieved by the operator by means of the Pre-flight checklist which records the altitude readout at the launch site as shown on the GPS altitude indicator before flight. This site altitude will be subtracted from subsequent GPS altitude readouts to arrive at altitude AGL. This compensates for field-site barometric pressure variations when calculating altitude AGL. All altitudes reported to ATC will be in feet AGL.

Relief from §91.121 has previously been granted to similar petitions, for example Exemption 11062 (Astraeus Aerial) and Exemption 11138 (Douglas Trudeau).

[2.7] REQUESTED EXEMPTION FROM 14 CFR §91.405(a), §91.407(a)(1), §91.409(a)(1) & (2), §91.417(a) & (b)

Text of Cited Regulation:

(.405) Each owner or operator of an aircraft—

(a) 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;

*****

(.407) (a) No person may operate any aircraft that has undergone maintenance, preventive

maintenance, rebuilding, or alteration unless—

(1) It has been approved for return to service by a person authorized under § 43.7 of this chapter

*****

(.409) (a) Except as provided in paragraph (c) of this section, no person may operate an aircraft

unless, within the preceding 12 calendar months, it has had—

(1) An annual inspection in accordance with part 43 of this chapter and has been approved for return to service by a person authorized by § 43.7 of this chapter; or

(2) An inspection for the issuance of an airworthiness certificate in accordance with part 21 of this chapter.

*****

(.417) (a) Except for work performed in accordance with §§ 91.411 and 91.413, each registered

owner or operator shall keep the following records for the periods specified in paragraph (b) of this section:

(1) Records of the maintenance, preventive maintenance, and alteration and records of the 100-hour, annual, progressive, and other required or approved inspections, as appropriate, for each aircraft (including the airframe) and each engine, propeller, rotor, and appliance of an aircraft. The records must include—

(i) A description (or reference to data acceptable to the Administrator) of the work performed; and

(ii) The date of completion of the work performed; and

(iii) The signature, and certificate number of the person approving the aircraft for return to service.

(2) Records containing the following information:

(i) The total time in service of the airframe, each engine, each propeller, and each rotor.

(ii) The current status of life-limited parts of each airframe, engine, propeller, rotor, and appliance.

(iii) The time since last overhaul of all items installed on the aircraft which are required to be overhauled on a specified time basis.

(iv) The current inspection status of the aircraft, including the time since the last inspection required by the inspection program under which the aircraft and its appliances are maintained.

(v) The current status of applicable airworthiness directives (AD) and safety directives including, for each, the method of compliance, the AD or safety directive number and revision date. If the AD or safety directive involves recurring action, the time and date when the next action is required.

(vi) Copies of the forms prescribed by § 43.9(a) of this chapter for each major alteration to the airframe and currently installed engines, rotors, propellers, and appliances.

(.417) (b) The owner or operator shall retain the following records for the periods prescribed:

(1) The records specified in paragraph (a)(1) of this section shall be retained until the work is repeated or superseded by other work or for 1 year after the work is performed.

(2) The records specified in paragraph (a)(2) of this section shall be retained and transferred with the aircraft at the time the aircraft is sold.

(3) A list of defects furnished to a registered owner or operator under § 43.11 of this chapter shall be retained until the defects are repaired and the aircraft is approved for return to service.

Reason for Exemption: These sections reference the procedures and protocols under 14 CFR Part 43, which applies only to aircraft with an airworthiness certificate. Given that the sUAS will not have an airworthiness certificate, these sections will not apply to the applicant.

Mitigation Basis: Maintenance (including routine maintenance and repair to correct functionality issues) will be conducted by the operator. Any sUAS maintenance or alterations that affect operations or flight characteristics (e.g., replacement of a motor or electronic speed controller, but not replacement of the battery), will undergo a functional

flight test before being returned to service. Such maintenance, inspection, or alterations will be noted in the aircraft logbook, to include total flight hours, description of work, and the signature of the person returning the sUAS to service. As required in §91.7(b), the PIC also completes a pre-flight checklist to ensure the sUAS is safe for flight before every flight. An equivalent level of safety is therefore achieved by documentation of any maintenance or repair work done on the sUAS, functional flight tests after certain maintenance, and pre-flight checkouts to ensure all systems are safe for flight.

Relief from §91.405(a), §91.407(a)(1), §91.409(a)(1) & (2), and §91.417(a) & (b) has previously been granted to similar petitions, for example Exemption 11062 (Astraeus Aerial), Exemption 11138 (Douglas Trudeau), and Exemption 11110 (Trimble Navigation Ltd).

[3] RELATING TO PILOT IN COMMAND

[3.1] OVERVIEW AND SUPPORTING INFORMATION

The applicant, Jesse Slesar, would be the pilot-in-command (PIC) for all sUASs operations under this exemption request. Jesse Slesar's commitment to safety, technical expertise in aerospace systems, flight training and certification, and experience with similar systems all enable operation of the sUASs while meeting or exceeding the safety levels currently seen in manned platforms that perform similar missions.

Technical Expertise. The PIC, Jesse Slesar, works in the electronics industry and has been a hobbyist for several years. Furthermore Jesse Slesar has the technical background and knowledge to fundamentally understand the capabilities, and limitations, of the sUAS and to perform any required maintenance to keep the sUAS in safe, working order.

Experience with Similar Systems. Skills specific to particular equipment operations (e.g., handling of controls, specific airspeeds, etc.) offer less of a parallel from traditional commercial aircraft to sUAS due to the great difference in responsiveness, control, and agility of these smaller systems. However, the PIC, Jesse Slesar, has been flying small, electric RC helicopters and other small, unmanned aircraft systems recreationally for over 8 years. Bernard Malouin Jr has over 50 hours of flight time on small, electric rotorcraft in recreational settings. Moreover, Jesse Slesar has over 40 hours of flight time on multi-rotor sUAS, and well over the 5 hours of logged flight time on the exact makes and models of this exemption.

[3.2] REQUESTED EXEMPTION FROM 14 CFR 61.113(a)

Text of Cited Regulation:

(a) Except as provided in paragraphs (b) through (h) of this section, no person who holds a private pilot certificate may act as pilot in command of an aircraft that is carrying passengers or property for compensation or hire; nor may that person, for compensation or hire, act as pilot in command of an aircraft.

Reason for Exemption: Regulation §61.113(a) limits operators with a private pilot certificate to non- commercial operations. While the sUASs will not be carrying passengers or transporting property for hire, the operator will be the pilot in command of an aircrafts being used in a compensated activity. Therefore, an exemption from §61.113(a) is requested.

Mitigation Basis: Because the sUASs 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 sUASs to have a private pilot certificate rather than a commercial pilot's license. Further, as explained in [3.1], the applicant is exceptionally well qualified to operate such systems with years of recreational experience with like systems. The combination of these relevant skills reduces the risk to the public and the national airspace to levels below what would be found with knowledge acquired from a commercial pilot license alone. To maintain a level of currency, within the previous 90 days the PIC will also conduct at least 3 take offs and landings with the sUASs before commencing a commercial flight as noted in the SOP. The size (cf., [2.1]), speed (cf., [2.1]), and operating limitations (cf., [4] and SOP) found herein exceed the level of safety that would otherwise be found with a commercial pilot operating a conventional helicopter.

Relief from §61.113(a) has previously been granted to similar petitions, for example Exemption 11062 (Astraeus Aerial), Exemption 11138 (Douglas Trudeau), and Exemption 11110 (Trimble Navigation Ltd).

[4] RELATING TO THE sUAS OPERATIONS

[4.1] OVERVIEW AND SUPPORTING INFORMATION

The sUAS under this petition is equipped with an imaging sensor (e.g., GoPro video camera, and larger SLR type cameras on the Syndrone) and is to be operated for aerial imaging, photography, and videography of property and events in a limited and well-defined boundary. The intention is to capture video of properties or events with the owner or coordinators permission. Examples would be events such as weddings or similar events, private athletic competitions, or shooting photos and videos of real estate locations with the owners consent.

The proposed operations serve many needs of homeowners, Realtors, and others in a way that is more cost effective and safer than traditional approaches. One example pertains to a homeowner or Realtor who wishes to have an aerial view of a property for advertising, marketing, or reasons of general interest. Traditional methods include the use of a helicopter, posing additional risks due to the persons onboard the platforms, significant weight (several tons), carriage of combustible Jet A fuel (over 100 gallons), and the relative lack of maneuverability/agility of such platforms. This is all compounded by additional harmful impacts to nearby persons who are then exposed to additional noise pollution in excess of 100 dB, causing non-active participant safety concerns. Conducting this operation with the sUASs greatly reduces (or in some cases, eliminates) these risks.

Safe operation of the sUAS will be ensured by a thorough set of Standard Operating Procedures. A separate document has been attached to this petition with the fully detailed SOP; however, these topically include:

 Operation limited to visual, line-of-sight (VLOS)

 Operation limited to daytime activities; or night activities provided there is adequate lighting.

 Use of a visual observer (VO) for all flights, who is in direct verbal contact with PIC

 Operation limited to a maximum altitude of 400 feet AGL

 Operational minimum standoff distances for nonparticipating persons

 Operational minimum standoff distances for nonparticipating vehicles/structures

 Operation with minimum standoff distances to clouds

 No sUAS operations within 5 miles of a Class B, C, or D airport without ATC consent

 Comprehensive Pre-Flight inspection by the PIC to determine safe-for-flight

 Flight duration limited to 20 minutes in length or 30% battery remaining

Each of the above are listed in the attached SOP and are further elaborated upon in subsequent sections that discuss relief to specific FARs and how the portion of the SOP mitigates any risk that may be encountered by exemption from that particular FAR.

[4.2] REQUESTED EXEMPTION FROM 14 CFR §91.105

Text of Cited Regulation:

(a) During takeoff and landing, and while en route, each required flight crewmember shall—

(1) Be at the crewmember station unless the absence is necessary to perform duties in connection with the operation of the aircraft or in connection with physiological needs; and (2) Keep the safety belt fastened while at the crewmember station.

(b) Each required flight crewmember of a U.S.-registered civil aircraft shall, during takeoff and landing, keep his or her shoulder harness fastened while at his or her assigned duty station. This paragraph does not apply if—

(1) The seat at the crewmember's station is not equipped with a shoulder harness; or (2) The crewmember would be unable to perform required duties with the shoulder harness fastened.

Reason for Exemption: The regulation requires crew members (which may include the PIC and VO) to keep a safety belt fastened while at their crewmember stations. As the sUAS has no occupants, this regulation is not applicable as it would be detrimental to flight safety to require the operator and visual observer on the ground to remain with a safety belt fastened. Therefore, exemption from §90.105 is requested.

Mitigation Basis: Due to the unusual nature of the sUAS operation (remotely from ground, with no onboard crew), the safety of the general public, pilot in command, visual observer, and national airspace system is adversely affected under the interpretation of this requirement that the pilot in command and the visual observer on the ground must have a safety belt fastened at a designated station.

[4.3] REQUESTED EXEMPTION FROM 14 CFR §91.119(c)

Text of Cited Regulation:

Except when necessary for takeoff or landing, no person may operate an aircraft below the following altitudes:

(a) [omitted as not relevant to request for relief]

(b) [omitted as not relevant to request for relief]

(c) Over other than congested areas. An altitude of 500 feet above the surface, except over open water or sparsely populated areas. In those cases, the aircraft may not be operated closer than 500 feet to any person, vessel, vehicle, or structure.

(d) Helicopters. Helicopters may be operated at less than the minimums prescribed in paragraph (b) or (c) of this section if the operation is conducted without hazard to persons or property on the surface. In addition, each person operating a helicopter shall comply with any routes or altitudes specifically prescribed for helicopters by the Administrator.

Reason for Exemption: The regulation requires minimum standoff distances to persons and objects (in other than congested areas) of no less than 500 feet. Due to the altitude limitation of the sUASs (of 400 feet maximum) as well as the intended mission of aerial imaging/photography/videography, it will be necessary to operate closer than 500 feet to essential persons, structures, vehicles, and vessels. Therefore, an exemption is requested.

Mitigation Basis: The applicant has no intentions to operate the sUAS over congested areas. However, there is no clear definition as to what metrics constitute a congested area (as expressed in Exemption 11110). While “yellow” areas on sectional charts are a good means to alerting operators to potentially congested areas, these alone only indicate the general area is populated and is not sufficient to prescribe congestion (consistent with the findings of Exemption 11138), nor should they be used for such. The level of congestion should seemingly be determined relative to the aircraft being operated in the candidate Area of Operation. To ensure safety in the event of an emergency, the aircraft would ideally be afforded sufficient space to land without collision due to the density of nearby persons or structures. Clearly, the characteristic length scale (and, therefore, allowable density) for safe landing would vary substantially between an aircraft requiring hundreds of feet to make an emergency landing versus a sUAS that requires only several feet. The pilot in command will therefore use best judgment on whether a particular sUAS Area of Operation, which is spatially limited, is congested before commencing any flight activities. Such a judgment will take into consideration:

 The candidate Area of Operation will not be found acceptable if it includes an open air assembly of persons

 The candidate Area of Operation will be judged based on the expected flight boundaries. That is, a large open space in a heavily settled area would be judged based on the open space and not the surrounding area if operations are to be limited to safely within the open space.

 The candidate Area of Operation must provide sufficient free space away from persons and structures to allow typical takeoff, landing, and flight without presenting an undue hazard to nearby persons or structures.

 The candidate Area of Operation must provide sufficient free space to allow emergency landing procedures without presenting an undue hazard to nearby persons or structures.

 The candidate Area of Operation must allow the flight operations to adhere to the minimum standoff distances that would otherwise be required of an area other than a congested area.

If the Area of Operation is determined by the pilot in command to be congested, no flight operations shall occur. If the Area of Operation is determined by the pilot in command to be other than a congested area, the following limitations on flight operations will be imposed, based on the light weight of the sUASs (under30 lbs) and the findings of previous FAA analyses:

 Minimum standoff distances to non-participating persons is nominally 500 feet.

 If barriers or structures are present that can sufficiently protect non-participating persons

from the sUAS or debris in the event of an accident, then the sUAS may operate closer than 500 feet to non-participating persons afforded such protection.

o If a situation arises where non-participating persons leave such protection and are within 500 feet of the sUAS, flight operations must cease as soon as is practicable and in a manner to ensure the safety of the non-participating person as the primary concern.

 Minimum standoff distances may be less than 500 feet to vessels, vehicles, and structures when the owner/controller of any such vessel, vehicle, or structure grants permission and the PIC makes a safety assessment of the risk of operating closer to those objects and determines that it does not present an undue hazard.

 Minimum distance to clouds will be 500 feet below any clouds and 2000 feet horizontally from any clouds to ensure the PIC and VO have VLOS with the sUAS throughout the flight.

It is noted that, currently, full-scale helicopters are permitted under §91.119(d) to operate in similar missions with potentially less restrictive requirements. It is believed that the proposed limitations will maintain the safety of the general public on the ground at levels that exceed current safety levels of conventional helicopters performing similar missions.

Relief from §91.119(c) has previously been granted to similar petitions, for example Exemption 11138 (Douglas Trudeau) and Exemption 11110 (Trimble Navigation Ltd).

[4.4] REQUESTED EXEMPTION FROM 14 CFR §91.151(a)(1)

Text of Cited Regulation:

(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

Reason for Exemption: The sUASs in this petition does not carry any fuel and, therefore, this regulation is not well-posed for these sUASs. The sUASs are battery powered with a total flight duration that is limited to approximately 20 minutes. Therefore, requiring enough battery power to fly to the first destination plus an additional 20 minutes is not feasible.

Mitigation Basis: The proposed operations of the sUAS are limited to a defined area, typically a single property, with the property owner/controller's consent. Due to this, it is believed that not being able to fly for an additional 30 minutes does not engender the types of risks that §91.151(a)(1) was intended to alleviate given the sUAS is small, relatively low speed, and will not be flown over non-participating structures. An equivalent level of safety can be achieved by limiting flights to 20 minutes or 30% remaining battery power (manufacturer-recommended low battery limit), whichever occurs first. This is more than adequate to return the sUASs to the intended landing area and execute a normal landing procedure.

Relief from §91.151(a)(1) has previously been granted to similar petitions, for example Exemption 11062 (Astraeus Aerial), Exemption 11138 (Douglas Trudeau), and Exemption 11110 (Trimble Navigation Ltd).

[4.5] PROPOSED MODIFICATION OF TYPICAL SECTION 333 EXEMPTION CONDITION - NOTAMS

Text of Cited Typical Exemption Condition:

The operator must obtain an Air Traffic Organization (ATO) issued Certificate of Waiver or Authorization (COA) prior to conducting any operations under this grant of exemption. This COA will also require the operator to request a Notice to Airman (NOTAM) not more than 72 hours in advance, but not less than 48 hours prior to the operation.

Feedback on Condition: Due to the nature of the assignments/missions, the starting day/time of the sUAS operations in this petition may not always be known three days in

advance, and it would not be unexpected to be asked to support missions the next day (within 24 hours). Furthermore, weather conditions in the Northeast are variable with meteorological forecasts often changing when made several days in advance. It is therefore respectfully requested that the above typical exemption condition be modified to require the operator to request a NOTAM not more than 72 hours in advance, but not less than 12 hours prior to the operation.

Mitigation Basis: It is believed that this will not adversely affect national airspace safety as NOTAMs are checked before flights and may be checked during flights. Allowing NOTAMs to be requested closer to the actual flight operations (when weather conditions are more accurately predicted) will greatly increase the fidelity of the NOTAM process and airman awareness by producing fewer false-alarms, and, as a consequence, leading to greater vigilance to those receiving the NOTAM.

[5] PUBLIC INTEREST

The proposed exemption under Section 333 of the FAA Modernization and Reform Act of 2012 is within the public interest. This petition for imaging, photography, and videography of property and events would allow access to aerial imaging to those who would previously have been excluded from the market by the cost of using a larger, manned aircraft. The impact to the public is multifaceted, including greater access to aerial capabilities, increased levels of safety over conventional manned systems to perform the same duty, and reduced impact to nearby persons or ecological sites due to noise or burned hydrocarbon emissions.

One example is a homeowner who suspects possible roof damage, perhaps as a result of a recent storm. To determine if damage has occurred, the homeowner may wish to inspect the roof before calling a carpenter or repairperson. This may lead to an unprepared homeowner in peril on an icy or slippery roof. By comparison, the sUAS can quickly be used to image the suspect area and those images can subsequently be visually inspected by the homeowner, greatly reducing the risk to persons.

A second example pertains to a homeowner or Realtor who wishes to have an aerial view of a property for advertising, marketing, or reasons of general interest. Traditional methods include the use of a helicopter, posing additional risks due to the persons onboard the platforms, significant weight (several tons), carriage of combustible Jet A fuel (over 100 gallons), and the relative lack of maneuverability/agility of such platforms. This is all compounded by additional harmful impacts to nearby persons who are then exposed to additional noise pollution. Typical decibel noise level for a Bell helicopter at

100 feet is approximately 100 dB. By contrast, the sUAS at less than 10 feet is approximately 80 dB, leading to a 4X reduction in noise pollution, even when 10X closer.

[6] SUMMARY FOR PUBLICATION IN THE FEDERAL REGISTER, IF NEEDED

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

Applicant seeks an exemption from the following rules:

14 CFR Part 21, Subpart H; 14 CFR §61.113(a); 14 CFR §91.7(a); 14 CFR §91.9(b)(2); 14 CFR §91.105; 14 CFR §91.119(c); 14 CFR §91.121; 14 CFR §91.151(a)(1); 14 CFR §91.203(a)(1); 14 CFR §91.203(b); 14 CFR §91.405(a); 14 CFR §91.407(a)(1); 14 CFR §91.409(a)(1); 14 CFR §91.409(a)(2); 14 CFR §91.417(a); 14 CFR §91.417(b) to operate two small, unmanned aircraft systems (sUASs) weighing less than 30 lbs in commercial aerial imaging, photography, and videography operations.

[7] CONCLUDING REMARKS

It is believed that the criteria presented in this petition, including size, weight, operational parameters, pilot qualifications and training, and Standard Operating Procedures, provide a very high level of safety, at or above current levels, during the proposed sUAS use. This level of safety, the interest to the public, and the commission of the FAA to integrate sUAS into the national airspace provide more than adequate justification for the grant of the requested exemptions allowing commercial operation of the applicant's sUAS.

Below are links to the manufacturers of the flight controllers for both frames, they should include Standard Operating Procedures, and Pre-Flight Checklists.

http://download.dji-innovations.com/downloads/phantom_2/en/PHANTOM2_User_Manual_v1.2_en.pdf

http://wiki.mikrokopter.de/en/FlightCtrlManual

The applicant is very passionate and active in the field of sUAS. Should any supplemental information be helpful in the adjudication of this exemption petition, please do not hesitate to get in contact. Moreover, if it provides any value now or in the future, the applicant would be pleased to offer feedback on the exemption process or offer input (either procedural or technical) on future implementations to satisfy Sections 332 or 334 of the FMRA.

Respectfully submitted,

Jesse Slesar

Sky Definition Photography