



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

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

May 19, 2015

Exemption No. 11620  
Regulatory Docket No. FAA-2015-0558

Mr. Robert Syme  
Owner  
Skycam Video  
7662 Matchlock Heights  
Colorado Springs, CO 80923

Dear Mr. Syme:

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

By letter dated March 2, 2015, you petitioned the Federal Aviation Administration (FAA) on behalf of Skycam Video (hereinafter petitioner or operator) for an exemption. The exemption would allow the petitioner to operate an unmanned aircraft system (UAS) to conduct aerial photography and videography for mapping, inspections of drainage ways, detention ponds, utilities, construction industries, and real estate properties.

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

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

#### **Airworthiness Certification**

The UAS proposed by the petitioner is a DJI Inspire 1.

The petitioner requested relief from 14 CFR part 21, *Certification procedures for products and parts, Subpart H—Airworthiness Certificates*. In accordance with the statutory criteria provided in Section 333 of Public Law 112–95 in reference to 49 U.S.C. § 44704, and in consideration of the size, weight, speed, and limited operating area associated with the aircraft and its operation, the Secretary of Transportation has determined that this aircraft meets the conditions of Section 333. Therefore, the FAA finds that the requested relief from 14 CFR part 21, *Certification procedures for products and parts, Subpart H—Airworthiness Certificates*, and any associated noise certification and testing requirements of part 36, is not necessary.

### **The Basis for Our Decision**

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

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

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

### **Our Decision**

In consideration of the foregoing, I find that a grant of exemption is in the public interest. Therefore, pursuant to the authority contained in 49 U.S.C. 106(f), 40113, and 44701, delegated to me by the Administrator, Skycam Video is granted an exemption from 14 CFR §§ 61.23(a) and (c), 61.101(e)(4) and (5), 61.113(a), 61.315(a), 91.7(a), 91.119(c), 91.121, 91.151(a)(1), 91.405(a), 91.407(a)(1), 91.409(a)(1) and (2), and 91.417(a) and (b), to the extent necessary to allow the petitioner to operate a UAS to perform aerial data collection. This exemption is subject to the conditions and limitations listed below.

### **Conditions and Limitations**

In this grant of exemption, Skycam Video is hereafter referred to as the operator.

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

1. Operations authorized by this grant of exemption are limited to the DJI Inspire 1 when weighing less than 55 pounds including payload. Proposed operations of any other aircraft will require a new petition or a petition to amend this exemption.
2. Operations for the purpose of closed-set motion picture and television filming are not permitted.
3. The UA may not be operated at a speed exceeding 87 knots (100 miles per hour). The exemption holder may use either groundspeed or calibrated airspeed to determine compliance with the 87 knot speed restriction. In no case will the UA be operated at airspeeds greater than the maximum UA operating airspeed recommended by the aircraft manufacturer.
4. The UA must be operated at an altitude of no more than 400 feet above ground level (AGL). Altitude must be reported in feet AGL.
5. The UA must be operated within visual line of sight (VLOS) of the PIC at all times. This requires the PIC to be able to use human vision unaided by any device other than corrective lenses, as specified on the PIC's FAA-issued airman medical certificate or U.S. driver's license.
6. All operations must utilize a visual observer (VO). The UA must be operated within the visual line of sight (VLOS) of the PIC and VO at all times. The VO may be used to satisfy the VLOS requirement as long as the PIC always maintains VLOS capability. The VO and PIC must be able to communicate verbally at all times; electronic messaging or texting is not permitted during flight operations. The PIC must be designated before the flight and cannot transfer his or her designation for the duration of the flight. The PIC must ensure that the VO can perform the duties required of the VO.
7. This exemption and all documents needed to operate the UAS and conduct its operations in accordance with the conditions and limitations stated in this grant of exemption, are hereinafter referred to as the operating documents. The operating documents must be accessible during UAS operations and made available to the Administrator upon request. If a discrepancy exists between the conditions and limitations in this exemption and the procedures outlined in the operating documents, the conditions and limitations herein take precedence and must be followed. Otherwise, the operator must follow the procedures as outlined in its operating documents. The operator may update or revise its operating documents. It is the operator's responsibility to track such revisions and present updated and revised

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

8. Any UAS that has undergone maintenance or alterations that affect the UAS operation or flight characteristics, e.g., replacement of a flight critical component, must undergo a functional test flight prior to conducting further operations under this exemption. Functional test flights may only be conducted by a PIC with a VO and must remain at least 500 feet from other people. The functional test flight must be conducted in such a manner so as to not pose an undue hazard to persons and property.
9. The operator is responsible for maintaining and inspecting the UAS to ensure that it is in a condition for safe operation.
10. Prior to each flight, the PIC must conduct a pre-flight inspection and determine the UAS is in a condition for safe flight. The pre-flight inspection must account for all potential discrepancies, e.g., inoperable components, items, or equipment. If the inspection reveals a condition that affects the safe operation of the UAS, the aircraft is prohibited from operating until the necessary maintenance has been performed and the UAS is found to be in a condition for safe flight.
11. The operator must follow the UAS manufacturer's maintenance, overhaul, replacement, inspection, and life limit requirements for the aircraft and aircraft components.
12. Each UAS operated under this exemption must comply with all manufacturer safety bulletins.
13. Under this grant of exemption, a PIC must hold either an airline transport, commercial, private, recreational, or sport pilot certificate. The PIC must also hold a current FAA airman medical certificate or a valid U.S. driver's license issued by a state, the District of Columbia, Puerto Rico, a territory, a possession, or the Federal Government. The PIC must also meet the flight review requirements specified in 14 CFR § 61.56 in an aircraft in which the PIC is rated on his or her pilot certificate.
14. The operator may not permit any PIC to operate unless the PIC demonstrates the ability to safely operate the UAS in a manner consistent with how the UAS will be operated under this exemption, including evasive and emergency maneuvers and maintaining appropriate distances from persons, vessels, vehicles and structures. PIC qualification flight hours and currency must be logged in a manner consistent with

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

15. UAS operations may not be conducted during night, as defined in 14 CFR § 1.1. All operations must be conducted under visual meteorological conditions (VMC). Flights under special visual flight rules (SVFR) are not authorized.
16. The UA may not operate within 5 nautical miles of an airport reference point (ARP) as denoted in the current FAA Airport/Facility Directory (AFD) or for airports not denoted with an ARP, the center of the airport symbol as denoted on the current FAA-published aeronautical chart, unless a letter of agreement with that airport's management is obtained or otherwise permitted by a COA issued to the exemption holder. The letter of agreement with the airport management must be made available to the Administrator or any law enforcement official upon request.
17. The UA may not be operated less than 500 feet below or less than 2,000 feet horizontally from a cloud or when visibility is less than 3 statute miles from the PIC.
18. If the UAS loses communications or loses its GPS signal, the UA must return to a pre-determined location within the private or controlled-access property.
19. The PIC must abort the flight in the event of unpredicted obstacles or emergencies.
20. The PIC is prohibited from beginning a flight unless (considering wind and forecast weather conditions) there is enough available power for the UA to conduct the intended operation and to operate after that for at least 5 minutes or with the reserve power recommended by the manufacturer if greater.
21. Air Traffic Organization (ATO) Certificate of Waiver or Authorization (COA). All operations shall be conducted in accordance with an ATO-issued COA. The exemption holder may apply for a new or amended COA if it intends to conduct operations that cannot be conducted under the terms of the attached COA.
22. All aircraft operated in accordance with this exemption must be identified by serial number, registered in accordance with 14 CFR part 47, and have identification (N-Number) markings in accordance with 14 CFR part 45, Subpart C. Markings must be as large as practicable.

23. Documents used by the operator to ensure the safe operation and flight of the UAS and any documents required under 14 CFR §§ 91.9 and 91.203 must be available to the PIC at the Ground Control Station of the UAS any time the aircraft is operating. These documents must be made available to the Administrator or any law enforcement official upon request.
24. The UA must remain clear and give way to all manned aviation operations and activities at all times.
25. The UAS may not be operated by the PIC from any moving device or vehicle.
26. All Flight operations must be conducted at least 500 feet from all nonparticipating persons, vessels, vehicles, and structures unless:
  - a. Barriers or structures are present that sufficiently protect nonparticipating persons from the UA and/or debris in the event of an accident. The operator must ensure that nonparticipating persons remain under such protection. If a situation arises where nonparticipating persons leave such protection and are within 500 feet of the UA, flight operations must cease immediately in a manner ensuring the safety of nonparticipating persons; and
  - b. The owner/controller of any vessels, vehicles or structures has granted permission for operating closer to those objects and the PIC has made a safety assessment of the risk of operating closer to those objects and determined that it does not present an undue hazard.

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

27. All operations shall be conducted over private or controlled-access property with permission from the property owner/controller or authorized representative. Permission from property owner/controller or authorized representative will be obtained for each flight to be conducted.
28. Any incident, accident, or flight operation that transgresses the lateral or vertical boundaries of the operational area as defined by the applicable COA must be reported to the FAA's UAS Integration Office (AFS-80) within 24 hours. Accidents must be reported to the National Transportation Safety Board (NTSB) per instructions contained on the NTSB Web site: [www.nts.gov](http://www.nts.gov).

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

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

30. At least 3 days before aerial filming, the operator of the UAS affected by this exemption must submit a written Plan of Activities to the local Flight Standards District Office (FSDO) with jurisdiction over the area of proposed filming. The 3-day notification may be waived with the concurrence of the FSDO. The plan of activities must include at least the following:
- a. Dates and times for all flights;
  - b. Name and phone number of the operator for the UAS aerial filming conducted under this grant of exemption;
  - c. Name and phone number of the person responsible for the on-scene operation of the UAS;
  - d. Make, model, and serial or N-Number of UAS to be used;
  - e. Name and certificate number of UAS PICs involved in the aerial filming;
  - f. A statement that the operator has obtained permission from property owners and/or local officials to conduct the filming production event; the list of those who gave permission must be made available to the inspector upon request;
  - g. Signature of exemption holder or representative; and
  - h. A description of the flight activity, including maps or diagrams of any area, city, town, county, and/or state over which filming will be conducted and the altitudes essential to accomplish the operation.
31. Flight operations may be conducted closer than 500 feet from participating persons consenting to be involved and necessary for the filming production, as specified in the exemption holder's MPTOM.

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

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

Sincerely,

/s/

John S. Duncan

Director, Flight Standards Service

March 2, 2015

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

Re: Exemption Request Section 333 of the FAA Reform Act and Part 11 of the Federal Aviation Regulations from 14 CFR part 21, subpart H; 14 C.F.R. 45.23(b); 14 CFR 61.113(a) & (b); 91.7(a); 91.9(b)(2); 91.103(b); 91.109; 91.119; 91.151(a); 91.203(a) & (b); 91.405(a); 91.407(a)(1); 91.409(a)(2); 91.417(a) & (b).

Dear Sir or Madam:

Pursuant to Section 333 of the FAA Modernization and Reform Act of 2012 (the Reform Act) and 14 C.F.R. Part 11, Skycam Video, a newly formed aerial video firm, hereby applies for an exemption from the listed Federal Aviation Regulations ("FARs") to allow commercial operation of its Small Unmanned Aircraft Systems ("sUAS") for aerial photography and videography for mapping, inspections of drainage ways, detention ponds, utilities, construction industries and real estate properties and other flight operations that could be performed safely and more cost effectively with the use of small UAS at low altitude within the U.S. National Airspace System as compared to manned aircraft. Operations would be performed only at the request of and with the authorization and permission of clients or their authorized agents in order to facilitate commerce and raise awareness of the beneficial uses of sUAS's 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.

**Exhibits:**

**Due to size of files please go to: [www.dji.com/product/inspire-1/spec](http://www.dji.com/product/inspire-1/spec) to review the following DJI-Inspire 1 Manuals and Safety Guidelines. Once website opens click on "Downloads". Then under Documents and Manuals open the following PDF files to review:**

- 1.) Inspire 1 Quick Start Guide (EN) v1.0
- 2.) Inspire 1 User Manual (EN) v1.0
- 3.) Inspire 1 Safety Guidelines v 1.0
- 4.) Inspire 1 Intelligent Flight Battery Safety Guidelines
- 5.) 1345 Propeller Locks Quick Start Guide
- 6.) Inspire 1 Maintenance Manual v 1.0

**Other Inspire 1 Informational Data:**

Please refer to the following DJI Inspire 1 tutorial videos listed at [www.dji.com/product/inspire-1/video](http://www.dji.com/product/inspire-1/video)

- 1.) DJI Inspire 1 – Unboxing and Preparing for Safe Flight
- 2.) DJI Inspire 1 Tutorial "Pilot App"
- 3.) DJI Inspire 1 Tutorial "Updating the Firmware"
- 4.) DJI Inspire 1 Tutorial "Dual Operator"
- 5.) DJI Inspire 1 Tutorial "How to Fly"
- 6.) DJI Inspire 1 Quick Start Guide



- 7.) DJI Inspire 1 Set Up & Demo Inc. Overview of Features of the App
- 8.) DJI Inspire 1 Flight Simulator for Apple App introduction

As detailed in this document and the referenced DJI Publications and tutorials, the requested exemption would permit the operation of sUAS under controlled conditions in airspace that is a.) limited b.) predetermined c.) controlled to access and d.) would provide safety enhancements to the already regulated safety practices presently followed by manned aircraft as governed by the FAA. Approval of this exemption would thereby enhance safety and fulfill the Secretary of Transportation's (the FAA Administrator's) responsibility to "...establish requirements for the safe operation of such aircraft systems in the national airspace system." Section 333(c) of the Reform Act.

**Applicant Contact Information:**

Skycam Video  
Robert Syme, Owner (Private Pilot)  
7662 Matchlock Heights  
Colorado Springs, CO. 80923  
PH: 719-499-4060  
Email: [rnsyme@msn.com](mailto:rnsyme@msn.com)

**A. STATUTORY AUTHORITY FOR EXEMPTIONS**

The Federal Aviation Act expressly grants the FAA authority to issue exemptions. This statutory authority includes exempting civil aircraft, as the term is defined under §40101 of the Act, including sUASs, from the requirement that all civil aircraft must have a current airworthiness certificate.

The Administrator may grant an exemption from a requirement of a regulation prescribed under subsection (a) or (b) of this section or any sections 44702 – 44716 of this title if the Administrator finds the exemption in the public interest. 49 U.S.C. §44701(f) See also 49 USC §44711(a); 49 USC §44704; CFR §91.203(a)(1).

Section 333(b) of the Reform Act assists the Secretary in determining whether sUASs may operate in the National Airspace System without creating a hazard to the user, the public, or a threat to national security. In making this determination, the Secretary must consider:

- a.) The sUAS's size, weight, speed and operational capability
- b.) Whether the sUAS operates within the visual line of sight of the operator
- c.) Whether the sUAS operates outside of highly populated areas and away from close proximity to airports

Reform Act §333(a). If the Secretary determines that a sUAS "may operate safely in the national airspace system, the Secretary shall establish requirements for the safe operation of such aircraft in the national airspace system." Id. §333(c).

Skycam Video will be using a quad copter manufactured by DJI. The model being used is the Inspire 1. The Inspire 1 weighs less than 8 pounds, including payload. The Inspire 1, operating under normal conditions, (no wind) travels at a maximum speed of 49 knots and has the capability to hover and move in the vertical and horizontal plane simultaneously. The Inspire 1 will operate only in the pilot's visual line of sight at all times and will operate only within the limits of the area required to be videoed or photographed. Such operations will insure that the Inspire 1 will "not to create a hazard to users of the national airspace system or the public." Reform Act Section 333(b).

Given the small size of the Inspire 1 and the restricted and predetermined environment within which it will operate, this application falls squarely within the zone of safety (an equivalent level of safety) in which Congress envisioned that the FAA must, by exemption, allow commercial operations of sUAS to commence immediately.

Also due to the small size of the Inspire 1 and the low altitudes and restricted areas in which it will operate, approval of the application presents no national security issue.

Given the clear direction in Section 333 of the Reform Act, the authority contained in the Federal Aviation Act, as amended; the strong equivalent level of safety surrounding the proposed operations, and the significant public benefit, including enhanced safety, grant of the requested exemptions is in the public interest. Accordingly, Skycam Video respectfully requests that the FAA grant the requested exemption without delay.

## **B. PUBLIC INTEREST**

This exemption application is expressly submitted to fulfill Congress's goal in passing Section 333(a) through (c) of the Reform Act. This law directs the Secretary of Transportation to consider whether certain unmanned aircraft systems may operate safely in the National Airspace System before completion of the rulemaking required under Section 332 of the Reform Act. By granting an exemption the FAA will fulfill Congress's intent of allowing UAS to operate with significant safety precautions in low risk environments.

The use of sUAS for videoing or photographing drainage ways, detention ponds and survey mapping can reduce the risk of injuries to workers attempting to walk in very dangerous/difficult terrain found in waterways, detention ponds and surveying areas as well as reduce environmental impacts to wetland areas that are very sensitive for wildlife. Use of sUASs on construction sites can significantly reduce the risk to workers of falls while inspecting, surveying or monitoring site progress. sUASs can inspect, photograph and collect data on hard to get to areas that otherwise would require worker inspection. Falls are the leading source of workplace fatality and injury on construction sites<sup>1</sup>, and reducing falls through sUASs use for site imaging could save workers lives. Aerial videography for real estate marketing has been around for years through manned fixed wing aircraft and helicopters. For small budget real estate companies and average homeowners the expense of such aerial videography is cost prohibitive. Only large companies and high end realtors or luxury homeowners can afford to absorb such expense, depriving non-luxury homeowners and lower budget realtors from a valuable marketing

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<sup>1</sup> "Commonly Used Statistics", Occupational Safety & Health Administration. Available at: <https://www.osha.gov/oshstats/commonstats.html>

tool. Manned aircraft pose a threat to the public through potential catastrophic crashes resulting in loss of life due to the potential combustible fuel that can explode and burn on impact. sUASs pose no such threat since size and lack of combustible fuel alleviates any potential threat to the public.

Finally, sUASs reduce the environmental impact by dramatically decreasing the energy used for aerial imaging. The Inspire 1 uses rechargeable lithium ion batteries, as opposed to fossil fuels burned in operation of small aircraft and helicopters that are hundreds or thousands of times heavier.

### **C. EQUIVALENT LEVEL OF SAFETY**

Skycam Video proposes that the exemption requested herein apply to civil aircraft that have the characteristics and that operate with the limitations listed herein. These limitations provide for at least an equivalent or even higher level of safety to operations under the current regulatory structure because the proposed operations represent a safety enhancement to the already safe operations conducted with helicopters and other conventional aircraft.

Skycam Video will be bound by the following limitations when conducting its sUAS operations under an FAA issued exemption:

- 1.) The sUAS will be less than 8 pounds.
- 2.) Flights will be operated within visual line of sight of the pilot.
- 3.) Maximum total flight time for each operational flight will be 14 minutes. The Inspire 1 calculates battery reserve in real time, and will return to its ground station with at least 20% battery reserve should that occur prior to the 14 minute limit.
- 4.) Flights will be operated normally at approximately 150 feet AGL, never exceeding 400 feet AGL.
- 5.) Horizontal flight speed will not exceed 42 knots.
- 6.) Crew for each operation will consist of the sUAS Pilot who will keep the sUAS within his/her visual line of sight at all times and a Visual Observer who will also keep the aircraft within line of sight as well as watch for other aircraft or personnel that might enter the operations area.
- 7.) Pilot and Visual Observer will keep in constant verbal contact throughout the duration of each flight. If conventional aircraft or unauthorized personnel enter the flight operations area unexpectedly the flight will be terminated immediately.
- 8.) The sUAS pilot will be trained in flight, operations, checklists and safety procedures as detailed in the DJI Inspire 1 Manuals found at [www.dji.com/product/inspire-1/spec](http://www.dji.com/product/inspire-1/spec) and DJI Inspire 1 Tutorials found at [www.dji.com/product/inspire-1/video](http://www.dji.com/product/inspire-1/video).
- 9.) The sUAS will only operate in a confined predetermined area around which a security perimeter will be established for flight operations.
- 10.) Warning signs will be posted in the flight operations area indicating to remain clear of the area.
- 11.) A briefing will be conducted in regard to the planned sUAS operations prior to each flight. It will be mandatory that all personnel who will be present within the boundaries of the safety perimeter be present for this briefing.
- 12.) All personnel will consent to the UAS flyover on site by waiver, and the operator will obtain additional verbal or written consent of all persons who will be allowed within 100 feet of the flight operation.
- 13.) Written and/or oral permission from the relevant property holders will be obtained.

- 14.) All required permissions and permits will be obtained from territorial, state, county or city jurisdictions, including local law enforcement, fire or other appropriate governmental agencies when required.
- 15.) The pilot will take all actions including reviewing weather, flight battery requirements, landing and takeoff distances and aircraft performance data before initiation of flight.
- 16.) The pilot will have a minimum of 200 flight cycles and 25 hours of total time as a sUAS rotocraft pilot and at least 10 hours of sUAS as pilot with the DJI Inspire 1 to be utilized for operations under the exemption.
- 17.) The pilot will have a Private Pilot's license and a Class III medical.
- 18.) The pilot will perform a minimum of 3 takeoffs and landings within the preceding 90 days with the Inspire 1 sUAS.
- 19.) If the Inspire 1 loses communications or loses its GPS signal, it will automatically return to a pre-determined location within the security perimeter and land. Please refer to the DJI Inspire 1 User Manual pages 13-16.
- 20.) The pilot will abort a flight (return to home) in case of unpredicted obstacles or emergencies with the push of a button. Please refer to DJI Inspire 1 User Manual page 28.
- 21.) Single family residential and commercial properties to be videoed will be limited to a minimum of one acre parcels, in size, which would allow the sUAS to be maneuvered around the perimeter of the structure without over flying the structure being videoed as well as any structures on adjacent properties thus allowing an emergency landing, if a power failure occurs, without any undue hazard to persons or property on the surface.
- 22.) sUAS will not be flown within 5 miles of airports as shown on current FAA-published aeronautical charts unless authorization has been granted by the controlling ATC facility governing that airport.
- 23.) Pilot will preflight/inspect sUAS for airworthiness prior to each flight including the Ground Control station.
- 24.) Pilot will maintain the Inspire 1 and properly document all maintenance and alterations in the Inspire 1 records.
- 25.) Pilot will conduct a functional test flight after all maintenance prior to the next operational flight and record this flight in the Inspire 1 records/ flight log.
- 26.) All flights will be flown only during daylight hours under visual meteorological conditions (VMC).

**D. DESCRIPTION OF SPECIFIC REGULATIONS REQUESTING EXEMPTION FROM:**

**14 CFR Part 21, Subpart H: Airworthiness Certificates 14 C.F.R. §91.203(a)(1)**

Subpart H, entitled Airworthiness Certificates, establishes the procedural requirements for the issuance of airworthiness certificates as required by FAR §91.203 (a) (1). Given the size and limited operating area associated with the aircraft to be utilized by Skycam Video, an exemption from Part 21 Subpart H meets the requirements of an equivalent level of safety under Part 11 and Section 333 of the Reform Act. The Federal Aviation Act (49 V.S.C. §44701 (t) and Section 333 of the Reform Act both authorize the FAA to exempt aircraft from the requirement for an airworthiness certificate, upon consideration of the size, weight, speed, operational capability, and proximity to airports and populated areas of the particular sUAS. Our small UAS will be operated at low speed in a controlled environment, at least five miles from an airport and more than three miles from any densely populated area. An analysis of these criteria demonstrates that the sUAS 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 helicopter) operating with an airworthiness certificate without the restrictions and conditions proposed.

The DJI Inspire 1 to be operated hereunder is less than 8 lbs. fully loaded, carries neither a pilot nor passenger, carries no explosive materials or flammable liquid fuels, and operates exclusively within a secured area. Like other civil aircraft, operations under this exemption will be tightly controlled and monitored by the operator and under the requirements and in compliance with local public safety requirements, to provide security for the area of operation.

These safety enhancements provide a greater degree of safety to the public and property owners than conventional operations conducted with airworthiness certificates issued under 14 C.F.R. Part 21, Subpart H. Lastly, application of these same criteria demonstrates that there is no credible threat to national security posed by the sUAS, due to its size, speed of operation, location of operation, lack of explosive materials or flammable liquid fuels, and ability to carry an external load no greater than two pounds .

#### **14 C.F.R. 45.23(b): Marking of the Aircraft**

This regulation requires certain experimental, provisionally certificated aircraft, or light-sport category aircraft to be marked with letters between 2 inches and 6 inches high “limited,” “restricted,” “light-sport,” “experimental,” or “provisional,” near each entrance to a cabin, cockpit, or pilot station.

Even though the sUAS will have no airworthiness certificate, an exemption would be needed as the sUAS will have no entrance to the cabin, cockpit or pilot station on which the word “Experimental” can be placed. Given the size of the sUAS, two-inch lettering would be impossible. The FAA has issued an exemption to this regulation: Exemption No. 11109.

#### **14 C.F.R. 61.113(a) & (b): Private pilot privileges and limitations: Pilot in Command**

Sections 61.113 (a) & (b) limit private pilots to non-commercial operations. Because the sUAS will not carry a pilot or passengers, the proposed operations can achieve the equivalent level of safety of current operations by requiring the pilot operating the sUAS to have completed sUAS flight training by reviewing each of the three DJI Inspire 1 manuals (attached to this document), review all DJI Inspire 1 tutorial videos listed at [www.dji.com/product/inspire-1/video](http://www.dji.com/product/inspire-1/video). The pilot would also perform a minimum of 200 flight cycles, 25 hours of total time as a sUAS aircraft pilot and a minimum of 10 hours of piloting the Inspire 1 before performing the first “operational flight” under this exemption. Unlike a conventional aircraft that carries the pilot and passengers, the sUAS is remotely controlled with no living thing or cargo on board. The area of operation is controlled and restricted, and all flights are planned and coordinated in advance. 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 pilot who has met the minimum requirements stated above exceeds the present level of safety achieved by 14 C.F.R. §61.113 (a) & (b).

#### **14 C.F.R. 91.7(a): Civil aircraft airworthiness**

The regulation requires that no person may operate a civil aircraft unless it is in airworthy condition. As there will be no airworthiness certificate issued for the aircraft, should this exemption be granted, no FAA regulatory standard will exist for determining airworthiness. Given the size of the aircraft and the

requirements contained in the DJI Inspire 1 Manuals, DJI Inspire 1 tutorials and the use of a preflight checklist prior to each flight an equivalent level of safety will be provided.

#### **14 C.F.R. 91.9(b)(2): Civil aircraft flight manual, marking and placard requirements**

The sUAS, given its size and configuration has no ability or place to carry such a flight manual on the aircraft, not only because there is no pilot on board, but because there is no room or capacity to carry such an item on the aircraft.

The equivalent level of safety will be maintained by keeping the flight manual at the ground control point where the pilot flying the sUAS will have immediate access to it. The FAA has issued the following exemptions to this regulation: Exemption Nos. 8607, 8737, 8738, 9299, 9299A, 9565, 9565B, 10167, 10167A, 10602, 32827, and 10700.

#### **14 C.F.R. 91.103(b): Preflight Action**

This regulation requires each pilot in command take certain actions before flight to ensure the safety of flight. An exemption is needed from this requirement as the pilot will take separate preflight actions, including checking for weather conditions, checking flight battery requirements, checking takeoff and landing distances, and all other actions in the Preflight Checklist in the DJI Inspire 1 Manuals. These actions will provide an equivalent level of safety.

#### **14 C.F.R. 91.109: Flight Instruction**

Section 91.109 provides that 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. By design, sUASs and remotely piloted aircraft do not have fully functional dual controls. Flight control is accomplished through the use of a control box that communicates with the aircraft via radio communications. The FAA has previously approved exemptions for aircraft without fully functional dual controls. See Exemption Nos. 5778K & 9862A. The equivalent level of safety provided by the fact that neither a pilot nor passengers will be carried in the aircraft, the ability to control the sUAS via radio signals from the controller, and by the size and speed of the aircraft.

#### **14 C.F.R. 91.119: Minimum Safe Altitudes**

Section 91.119 establishes safe altitudes for operation of civil aircraft. Section 91.119 (d) allows helicopters to be operated at less than the minimums prescribed, provided the person operating the helicopter complies with any route or altitudes prescribed for helicopters by the FAA. This exemption is for a multirotor craft that flies similarly to a helicopter, with vertical takeoff and vertical landing, which will typically operate at altitudes of 150 AGL, so an exemption may be needed to allow such operations. The sUAS will never operate at altitude higher than 400 AGL and will be in a restricted area with security perimeter, where buildings and people will not be exposed to operations without their pre-obtained consent.

The equivalent level of safety will be achieved given the size, weight, speed of the sUAS as well as the location where it is operated. No flight will be taken without the permission of the property owner or local officials. Because of the advance notice to the property owner and any onsite personnel all affected individuals will be aware of the planned flight operations. Compared to flight operations with aircraft or rotorcraft weighing far more than the maximum 8 lbs. proposed herein and carrying flammable fuel, any risk associated with our operations is far less than those presently presented with helicopters and other conventional aircraft operating at or below 500 AGL. In addition, the low-altitude operations of the sUAS will ensure separation between these sUAS operations and the operations of conventional aircraft that must comply with Section 91.119.

#### **14 C.F.R. 91.151(a): Fuel requirements for flight in VFR conditions**

Section 91.151 (a) outlines fuel requirements for beginning a flight in VFR conditions. The Inspire 1 is limited to operations in predetermined and controlled environments, and has a limited range and flight time which require an exemption from 14 CFR 91.151(a).

The battery powering the Inspire 1 provides approximately 18 minutes of powered flight. To meet the 30 minute reserve requirement in 14 CFR §91.151, DJI Inspire 1 flights would not be possible. Given the limitations on the DJI Inspire 1 proposed flight area and the location of its proposed operations within a predetermined area, a time frame of 14 minutes for flight in daylight VFR conditions is reasonable.

Skycam Video believes that an exemption from 14 CFR §91.151(a) falls within the scope of prior exemptions. See Exemption 10673 (allowing Lockheed Martin Corporation to operate without compliance with FAR 91.151 (a)). Operating the DJI Inspire 1, in a tightly controlled area where only people and property owners or official representatives who have signed waivers will be allowed, with less than 30 minutes of reserve fuel, does not engender the type of risks that Section 91.151(a) was intended to alleviate given the size and speed of the Inspire 1. Additionally, limiting Inspire 1 flights to less than 14 minutes would greatly reduce the utility for which the exemption will be granted.

An equivalent level of safety can be achieved by limiting flights to 14 minutes, or enough battery reserve to ensure that the Inspire 1 lands at the ground station with at least 20% of battery power (as determined by the onboard monitoring system and the pilot), whichever happens first. This restriction would be more than adequate to return the Inspire 1 to its planned landing zone from anywhere in its limited operating area.

Similar exemptions have been granted to other operations, including Exemptions 2689F, 5745, 10673, and 10808.

#### **14 CFR 91.203 (a) & (b): Carrying civil aircraft certification and registration**

The regulation provides in part:

(a) Except as provided in § 91.715, no person may operate a civil aircraft unless it has within it the following:

(1) An appropriate and current airworthiness certificate ....







detention ponds, utilities, construction industries and real estate properties and other flight operations that could be performed safely and more cost effectively with the use of small UAS at low altitude within the U.S. National Airspace System as compared to manned aircraft.

Approval of exemptions allowing commercial operations of sUASs enhances safety while reducing risk. Manned aircraft create a greater risk because the craft are much larger, have combustible fuel, and carry an onboard human pilot. In contrast, a sUAS weighing fewer than 8 lbs. and powered by batteries eliminates virtually all of that risk given the reduced mass and lack of combustible fuel carried on board. The sUAS will carry no passengers or crew and, therefore, will not expose them to the risks associated with manned aircraft flights.

The operation of small UASs, weighing less than 8 lbs., conducted in the strict conditions outlined above, will provide an equivalent level of safety supporting the grant of the exemptions requested herein, including exempting the applicant from the requirements of Part 21 and allowing commercial operations. These lightweight aircraft operate at slow speeds, close to the ground, and in a sterile environment and, as a result, are far safer than conventional operations conducted with turbine helicopters operating in close proximity to the ground and people.

## **Privacy**

All flights will occur over private or controlled access property with the property owner's prior consent and knowledge. Images taken will be of individuals who have also consented to being filmed or otherwise have agreed to be in the area where aerial photography will take place.

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Satisfaction of the criteria provided in Section 333 of the Reform Act of 2012 – size, weight, speed, operating capabilities, proximity to airports and populated areas and operation within visual line of sight and national security – provide more than adequate justification for the grant of the requested exemptions allowing commercial operation of Skycam Video's sUAS in above referenced services pursuant to the DJI Manuals attached hereto.

Thank you for considering this exemption request.

Sincerely,

Robert Syme  
Skycam Videos  
Owner (Private Pilot)