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

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

June 13, 2015

Exemption No. 11878
Regulatory Docket No. FAA–2015–1220

Mr. Mathew Jones
Director of Operations
BMS Aerial Photo Inc.
834 Cookson Avenue SE.
New Philadelphia, OH 44663

Dear Mr. Jones:

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 April 20, 2015, you petitioned the Federal Aviation Administration (FAA) on behalf of BMS Aerial Photo Inc. (hereinafter petitioner or operator) for an exemption. The petitioner requested to operate an unmanned aircraft system (UAS) to conduct aerial imagery collection and aerial mapping for uses such as; environmental impacts, mining activities and monitoring, and engineering projects.

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[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, BMS Aerial Photo Inc. is granted an exemption from 14 CFR §§ 61.23(a) and (c), 61.101(e)(4) and (5), 61.113(a), 61.315(a), 91.7(a), 91.119(c), 91.121, 91.151(a)(1), 91.405(a), 91.407(a)(1), 91.409(a)(1) and (2), and 91.417(a) and (b), to the extent necessary to allow the petitioner to operate a UAS to perform aerial data collection. This exemption is subject to the conditions and limitations listed below.

[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.

Conditions and Limitations

In this grant of exemption, BMS Aerial Photo Inc. is hereafter referred to as the operator.

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

1. Operations authorized by this grant of exemption are limited to the 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 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 June 30, 2017, unless sooner superseded or rescinded.

Sincerely,

/s/

John S. Duncan
Director, Flight Standards Service

Enclosures

BMS Aerial Photo Inc. Inc.
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New Philadelphia, Ohio 44663
330-308-5700
www.bmsaerial.com

April 20, 2015

US Department of Transportation, Docket Operations
West Building Ground Floor, Room W12-140
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

To Whom It May Concern:

Pursuant to Section 333 of the FAA Modernization and Reform Act of 2012 (FMRA) and 14 CFR Part 11, BMS Aerial Photo Inc., requests an exemption from the Federal Aviation Regulations outlined below. BMS Aerial Photo Inc. is requesting this exemption in order to allow the use of a DJI Inspire 1 Unmanned Aerial System (UAS) for commercial operations. The DJI Inspire 1 is capable of performing Precision Aerial Mapping, 3D Surface Modeling, Aerial Data Acquisition and Videography, among other capabilities, whereas all operations conducted will be within and under the conditions herein or those that may be established by the FAA as required by section 333 or Section 49 USC 44701.

In the granting of Exemption No. 11342, BMS Aerial Photo Inc. is seeking very similar requests and will be operating with the same UAS that was granted approval under this request.

BMS Aerial Photo Inc. is a company that has been in operation for over 20 years, with a vast amount of aviation knowledge, experience, and understanding of safety in accordance to FAA standards. The VO

(Visual Observer) has 4 years Department of Defense experience, combined with his work in an Aerial Reconnaissance Unit. He comes with vast aviation knowledge, with safety foremost in mind. Also, BMS Aerial Photo Inc. has 2 commercially licensed pilots on staff, with a reserve pilot holding a private pilot certificate. We have been conducting Aerial Imagery Collection and Aerial Mapping for uses such as; Environmental Impacts, Mining Activities and Monitoring, and Engineering Projects. We are seeking to provide the same services with the UAS, but with a safer and timelier collection of the data.

BMS Aerial Photo Inc. acknowledges that the operational use of the DJI Inspire 1 is within FAA adherence of proposed regulations based on:

- UAS's size, weight, speed, and operational capability
- Operation of the UAS to NOT be in close proximity to airports and populated areas.
- Operation of the UAS within visual line of sight of the operator and observer.

Under grant of the exemption, BMS Aerial Photo Inc. agrees to operate the DJI Inspire 1 with the following restrictions:

- All operations to occur in Class G airspace.
- All UAS will weigh less than 7lbs.
- All airborne operations will occur during daylight hours.
- All UAS pilots will hold a private pilot's license or commercial pilot license, minimum of a third-class medical exam, as well as a minimum of 5 flight hours with the UAS.
- Visual Observer will have 20/20 vision and a state issued driver's license.
- Operations will be conducted over private or controlled-access property.
- Permission from land owner/controller required before commencing any flight.
- Operations will avoid congested or populated areas, which are depicted in yellow on VFR Charts.
- Aircraft to remain in Visual Line of Sight (VLOS).
- Above Surface Level altitude to be restricted to 400ft.
- No operations within 2.5 miles from centerline azimuth of runway centerline measured from runway thresholds.
- 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.
- Open Pilot Pre-Flight Checklist
- Maintenance and Incident Documentation for all flights.

BMS Aerial Photo Inc. agrees to this Operator Requirement's. The DJI Inspire 1 has a semi-autonomous navigation and control system, which includes a Ground Control Station (GCS). All flights are programmed with GPS Guidance and can also be flown manually. Human intervention is possible at any moment during flight. In the case of unplanned events, the operator can intervene and take control of the UAS, or the UAS will detect errors itself and use its "return to home" function, and return to land where it took off. Also, included in the firmware of the DJI Inspire 1 are failsafe altitudes for the UAS to ascend to, before returning to its "home point" and maximum distance settings.

Additional automated safety functions and safety enhancing features include the following:

- Auto-Pilot detection of lost GPS satellite connection or lost communication with the PIC (Pilot in Command) controller, initiates an immediate return to home landing.
- Intelligent Battery Software on the aircraft notifies the PIC when the aircraft needs to return to home, and will automatically return to home when the battery levels reach 18%.
- The DJI Inspire 1 is equipped with a Sonar Vision Positioning System; this allows the UAS to hold a precise GPS location. This vision positioning system also detects the ground level, and will not land without the landing gear down, and on automatic landings, initiates the landing gear automatically.

The DJI Inspire 1 is carried to the survey location, not flown there. The DJI Inspire 1 will carry no passengers or crew, and will not expose any individuals to the risks associated with manned aircraft flights. No national security issues are raised by the grant of the requested exemptions. Given the size, load carrying capacity, operational speed, and the fact it carries no explosives or other dangerous materials, the DJI Inspire 1 poses no threat to national security.

The name and address of the Petitioner is:

BMS Aerial Photo, Inc.

834 Cookson Ave SE

New Philadelphia, Ohio 44663

POC: Mathew Jones
330-308-5700
mjones@buckeyemineral.com

14 CFR 11.81(b) - Exemptions Requested:

The FAA considers unmanned aircraft as “aircraft” flown by a “pilot” regardless of the location of the pilot. All aircraft and pilots must comply with applicable sections of Title 14 of the Code of Federal Regulations (14 CFR) and other rules/regulations to operate within the National Airspace. Unmanned aircraft are unable to comply with certain sections of 14 CFR as the regulations were written prior to the consideration of small UAS integration within the National Airspace. BMS Aerial Photo Inc. is requesting an exemption from certain parts of 14 CFR, as described below, in addition to any other regulations the FAA feels BMS Aerial Photo Inc. needs relief from in order to conduct their proposed operations.

14 CFR Part 21 subpart H
14 CFR 45.23 & 45.29
14 CFR 61.113 (a) & (b)
14 CFR 91.109
14 CFR 91.119
14 CFR 91.121

14 CFR 91.151 (a)
14 CFR 91.203 (a) & (b)
14 CFR 91.405 (a)
14 CFR 91.407
14 CFR 91.409
14 CFR 91.417
14 CFR 91.7
14 CFR 91.9 (b)
8900.227 Paragraph 16(c) (4)

14 CFR Part 11.81 (c) – The extent of relief BMS Aerial Photo Inc. seeks, and the reason BMS Aerial Photo Inc. seeks relief.

BMS Aerial Photo Inc. is seeking relief from the applicable sections of the Federal Aviation Regulations and other rules that would be necessary to permit civil flight operations within the national airspace. BMS Aerial Photo Inc. is requesting authorization to conduct small UAS operations under the proposed limitations within this request.

14 C.F.R. Part 21, Subpart H: Airworthiness Certificates

This part establishes the procedures for the issuance of an airworthiness certificate. While the FAA continues to work to develop airworthiness standards for Unmanned Aerial Systems, we request an experimental certificate be issued for the DJI Inspire 1 under either one or both of the following provisions:

21.191 Experimental certificates. Experimental certificates are issued for the following purposes : (a) Research and development. Testing new aircraft design concepts, new aircraft equipment, new aircraft installations, new aircraft operating techniques, or new uses for aircraft. (b) Showing compliance with regulations, conducting flight tests and other operations to show compliance with the airworthiness regulations including flights to show compliance for issuance of type and supplemental type certificates, flights to substantiate major design changes, and flights to show compliance with the function and reliability requirements of the regulations. Since the experimental certificate can be used for commercial purposes such as market surveys, sales demonstrations, and customer crew training, we would expect that an experimental certificate would permit our commercial purpose as well.

The aircraft will not carry persons or property, will not carry fuel, and will only fly under strict operational requirements. Combined with the UAS's lightweight frame work, being constructed primarily of carbon fiber and plastic, we propose that the UAS will be at least as safe, if not safer, than a conventionally certificated aircraft performing the same mission. If an experimental airworthiness certificate is not appropriate for this application, then we would request an exemption of 14 CFR Part 21, Subpart H, and the requirement for an airworthiness certificate in general.

14 C.F.R. 45.23(b). Marking of the Aircraft and 45.29 Size of Marks

The regulation requires: When marks include only the Roman capital letter "N" and the registration number is displayed on limited, restricted, or light-sport category aircraft or experimental or provisionally certificated aircraft, the operator must also display on that aircraft near each entrance to the cabin, cockpit, or pilot station, in letters not less than 2 inches nor more than 6 inches high, the words "limited", "restricted", "light-sport", "experimental", or "provisional", as applicable.

The DJI Inspire 1 has no entrance to the cabin, cockpit or pilot station on which the word "EXPERIMENTAL" can be placed. Upon registration the "N" number will be displayed. The word "Experimental" will be placed on the UAS so it's visible to all within the launch area. BMS Aerial Photo Inc. will mark the UAS with appropriate information regarding ownership, serial numbers, and any other information the FAA requests as a part of this requirement. Also, BMS Aerial Photo Inc. will have the ground station appropriately marked with a flag or other banner, with the notification of "UAS Operation Area".

14 C.F.R. 61.113 (a) And (b): Private Pilot Privileges and Limitations: Pilot in Command

Pursuant to 14 CFR 61.113 (a) & (b), no person who holds a private pilot certificate may act as a pilot in command of an aircraft that is carrying passengers or property for compensation or hire. Section 61.113(a) & (b) limit private pilots to non-commercial operations.

The DJI Inspire 1, unlike conventional aircraft that carries a pilot, passengers, and cargo, is remotely operated with no passengers or property of others on board. Section 61.133(a) requires an individual with a commercial pilot's license to be pilot in command of an aircraft for compensation or hire. In grant of Exemption No. 11062 to Astraeus Aerial, the FAA determined that a PIC with a private pilot certificate operating the Astraeus UAS would not adversely affect operations in the NAS or present a hazard to persons on the ground. Although, BMS Aerial Photo Inc. plans to use a Commercially Licensed Pilot with a current medical exam as their first PIC, however in the event of scheduling conflicts, a backup pilot would be used, and that backup pilot would hold a private pilot certificate with the appropriate medical exam.

14 C.F.R. 91.109: Flight Instruction

These regulations provide 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.

The DJI Inspire 1 ground-based control station will consist of One GPS Based hand-held radio transmitter and a second GPS Based hand-held radio transmitter which can be added, as an option, to control the

system for training purposes. For training both the student and instructor can operate the dual set of controls simultaneously. With both student and instructor having "hands-on" controls during flight, we feel that this technique meets the intent of 91.109 and provides an equivalent level of safety.

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

Section 91.119 establishes safe altitudes for operational of civil aircraft. The regulation states that over sparsely populated areas the aircraft cannot be operated closer than 500 feet to any person, vessel, vehicle, or structure.

Since BMS Aerial Photo Inc. plans to always operate at or below 400ft AGL, we would not comply with this requirement. Instead we will establish an equivalent level of safety by only conducting flights over privately owned property, with permission given by the owner or controller. The aircraft will not be operated over congested areas or over open-air assembly of people. All involved parties will be notified of the intended flight lines and altitudes, as well as the risks involved to persons or property on the ground. By operating at low altitudes and visual line of sight, in the unforeseen event of a power fail, an emergency landing could be performed without hazard to people or property on the ground. Given the small size of the UAS, any risks or hazards to persons, structures, or vehicles is minimal in comparison to conducting the same operations with conventional aircraft, and this should be considered in granting the exemption.

14 C.F.R. 91.121: Altimeter Settings

This regulation states that: (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.

The DJI Inspire 1 does not have the typical aircraft barometric altimeter onboard. It does carry an onboard GPS that determines its altitude AGL based off its launch point. Prior to each launch, a compass calibration will be done, to ensure the AGL is appropriate at all operational areas. Since we will be operating with VLOS and will be at or below 400ft, we feel the onboard GPS and these operational procedures will satisfy the equivalent level of safety.

14 C.F.R. 91.151(a): Fuel Requirements for Flight in VFR Conditions

This regulation prohibits an individual from beginning "a flight in an airplane under VFR conditions unless (considering wind and forecast weather conditions) there is enough fuel to fly to the first point of intended landing and assuming normal cruising speed-(1) during the day, to fly after that for at least 30 minutes; or (2) at night, to fly after that for at least 45 minutes."

The UAS is battery operated and the maximum duration of flight from a single battery charge is a maximum flight time of 20-24 minutes. BMS Aerial Photo Inc. plans to conduct each flight for 18 minutes, which is 70% of the battery life, and the UAS has an automatic return to home feature if the battery levels reach 18% life remaining. A "dynamic home" button on the remote control gives the PIC a one-touch button return home/base action. The DJI Inspire 1 is controlled by a GPS remote transmitter and an Apple iPad which runs an application (App) that provides airspeed, waypoints, compass, battery life, flight time, and airspace information. This would allow us to meet the reserve energy requirement of this paragraph. We request an exemption to the word "fuel" and ask for an equivalent interpretation with the word "energy".

14 CFR 91.203(a) & (b) – Civil Aircraft; Certifications Required

These regulations state that (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. 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. (2) An effective U.S. registration certificate issued to its owner or, for operation within the United States, the second copy of the Aircraft registration Application as provided for in §47.31(c), or a registration certification issued under the laws of a foreign country. (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.

This exemption would not be necessary should the FAA approve the exemption for 14 CFR Part 21 Subpart H. Since BMS Aerial Photo Inc. is not required to obtain an airworthiness certificate, this would not apply. BMS Aerial Photo Inc.'s PIC would maintain the UAS and will give their approval prior to each fight regarding the UAS' safety. If anything is found to be unsafe prior to flight or during the flight, the PIC would discontinue all operations, safely. To obtain an equivalent level of safety and comply with the intent of 91.203, we are proposing all relevant documentation required by the FAA will be located at the

ground control station and be available for inspection upon request. To identify the aircraft, the information found on an airworthiness certificate and registration will be affixed with a placard containing all pertinent information, including the word “Experimental” to satisfy 14 CFR 45.23.

EXPERIMENTAL

Manufacturer: DJI Innovations

Model: Inspire 1

Serial Number: W13DCB17020519

Owner: BMS Aerial Photo, Inc.

834 Cookson Ave SE

New Philadelphia, Ohio 44663

If Found Please Contact: 330-308-5700

14 CFR Subpart E (91.401 - 91.417) - Maintenance, Preventive Maintenance, Alterations.

Section 91.405(a) requires that an aircraft operator or owner “shall have that aircraft inspected as prescribed in subpart E of this part and shall between required inspections, except as provided in paragraph(c) of this section, have discrepancies repaired as prescribed in part 43 of this chapter”. The regulation provides that the operator is primarily responsible for maintaining the aircraft in an airworthy condition, including compliance with part 39 and 43. Paragraphs 91.407 and 91.409 require that the aircraft be "approved for return to service by a person authorized under 43.7" after maintenance and inspection.

The PIC will ensure before each flight the aircraft is in airworthiness condition and perform a detailed inspection after the flight is over to ensure its continued safety. In addition to these measures, the PIC will conduct a monthly required inspection of the UAS, and all its required operating equipment, to ensure its reliability and condition. All inspections will be documented and available upon request. If any issues or damages are found during inspection, the UAS will be sent to the manufacturer for repair. We feel these policies will ensure an equivalent level of safety.

14 C.F.R. 91.7(a): Civil Aircraft Airworthiness

This regulation states that (a) No person may operate a civil aircraft unless it is in airworthy condition and (b) The pilot in command of a civil aircraft is responsible for determining whether that aircraft is in condition for safe flight. The pilot in command shall discontinue the flight when un-airworthy mechanical, electrical, or structural conditions occur.

The DJI Inspire 1 operated without an airworthiness certificate, under the proposed conditions, will at a minimum, be as safe, or safer, than a conventional aircraft with an airworthiness certificate. The DJI Inspire 1 weighs 6.5 lbs. fully loaded; it will not carry a pilot, or a passenger, and does not carry flammable fuel, at any time while operating in controlled areas. The FAA will have advance notice of all operations above 200ft AGL, and BMS Aerial Photo Inc. will have authorization from property owners to be on site, ahead of the scheduled mission. With the combination of approval for onsite operations, the size of the UAS, no flammable fuel, and the fact the aircraft will be carried to the location of operation, not flown, establish at minimum the equivalent level of safety. The FAA has approved similar exemptions in 11062, 11063, 11064, 11065, 11066, 11067, 11080, and 11153.

14 C.F.R. 91.9(b) (2): Civil Aircraft Flight Manual in the aircraft and 14 CFR Part 91.203 (a) and (b)

Section 91.9(b) (2) provides: No person may operate a U.S.- registered civil aircraft (2) For which an Airplane or Rotorcraft Flight Manual is not required by 21.5 of this chapter, unless there is available in the aircraft a current approved airplane or Rotorcraft Flight Manual, approved manual material, markings, and placards, or any combination thereof.

This regulation states that no person may operate a U.S. registered civil aircraft-(1) For which an Airplane or Rotorcraft Flight Manual is required by Part 21.5 of 14 CFR unless there is available in the aircraft a current, approved Airplane or Rotorcraft Flight Manual or the manual provided for in 14 CFR Part 121.141 (b); and (2) For which an Airplane or Rotorcraft Flight Manual is not required by 14 CFR Part 21.5, 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.

Based on the FAA's Memorandum titled, "Interpretation regarding whether certain required documents may be kept at an unmanned aircraft's control station". The UAS, 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 Manufacturers operators' manual will be on site, during all UAS operations.

8900.227 Paragraph 16(c) (4): PIC Medical and Paragraph 16(e) (1) Observer Medical.

This policy provides that both the PIC and VO must have a valid FAA second-class medical certificate issued under part 67 in order to perform as a pilot or observer.

We propose the minimum requirements for the PIC be a FAA third class medical certificate. We propose the minimum requirements for the VO be 20/20 vision and a valid state issued driver's license. The vision requirement would ensure that the VO can see and observe obstructions or other air traffic. Given the unlikely event that both the PIC and VO become medically incapacitated while the aircraft is in flight, the UAS will return autonomously to the site of launching and land without crew intervention.

Therefore, requiring the PIC and VO to meet the same medical requirements as a commercial pilot carrying passenger in a large aircraft is an unnecessary burden.

14 CFR Part 11.81(d) – The reasons why granting BMS Aerial Photo Inc.'s request would be in the public interest

BMS Aerial Photo Inc. provides pursuant to Part 11, a summary of its exemption application to allow commercial operation of the DJI Inspire 1 unmanned aircraft in precision aerial mapping and surface modeling. With an exemption for the use of an UAS, we could continue conducting normal operations, but provide state agencies and clients a more affordable, safer method of collection of their important Geophysical Data, all while achieving a higher level of safety than previously realized. Traditional airborne mapping operations are conducted with a conventional Aircraft, Aircrew, and near perfect weather conditions, all while burning fossil fuels. Being able to eliminate, some of the risks posed from conventional aircraft and aircrew is in the public's interest.

Summary of BMS Aerial Photo Inc. Section 333 Exemption Request

For publication in the Federal Register, BMS Aerial Photo Inc. hereby provides, pursuant to Part 11, a summary of its exemption application to allow commercial operations of an unmanned aerial vehicle for 3D Surface Modeling, Aerial Imagery, and Data Collection. An exemption is requested from the following regulations:

14 C.F.R. Part 21 subpart H
14 C.F.R. 45.23 & 45.29
14 C.F.R. 61.113(a) (b)
14 C.F.R. 91.109(a)
14 C.F.R. 91.119
14 C.F.R. 91.121
14 C.F.R. 91.151(a)
14 C.F.R. 91.203(a) & (b)
14 C.F.R. 91.405(a)
14 C.F.R. 91.407
14 C.F.R. 91.409
14 C.F.R. 91.417
14 CFR 91.7
14 CFR 91.9 (b)
8900.227 Paragraph 16(c) (4)

The operation of the UAS described in this request, under the conditions outlined above, will deliver an equivalent level of safety to support the grant of our exemptions requested. BMS Aerial Photo Inc. is only requesting the exemption, should it be granted, to operate within the United States of America. We are seeking the authority to operate an UAS at locations in the national airspace. We feel that BMS Aerial Photo Inc. is capable of satisfying the criteria provided in Section 333 of the Reform Act of 2012, size, weight, speed, operating capabilities, proximity to airports and populated areas, operating within visual line of sight and having no threat to national security. Our request is consistent with the numerous exemptions that have already been granted.

If any further clarifications are needed, or to discuss our request from the above-listed exemptions, you can contact me directly. Thank you for your attention to this request.

Sincerely,

Mathew Jones
Director of Operations
BMS Aerial Photo, Inc.