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

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

May 20, 2015

Exemption No. 11633
Regulatory Docket No. FAA–2015–0576

Mr. Richard H. Brown
Counsel for Principia, Inc.
Day Pitney LLP
1 Jefferson Road
Parsippany, NJ 07054

Dear Mr. Brown:

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 4, 2015, you petitioned the Federal Aviation Administration (FAA) on behalf of Principia, Inc. (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 filming operations for a range of business including insurance, real estate, agriculture, infrastructure inspection, and motion picture and television production.

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 S1000.

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 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, Principia, 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.

Conditions and Limitations

In this grant of exemption, Principia, 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 S1000 when weighing less than 55 pounds including payload. Proposed operations of any other aircraft will require a new petition or a petition to amend this exemption.

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

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

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

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

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

7. This exemption and all documents needed to operate the UAS and conduct its operations in accordance with the conditions and limitations stated in this grant of exemption, are hereinafter referred to as the operating documents. The operating documents must be accessible during UAS operations and made available to the Administrator upon request. If a discrepancy exists between the conditions and limitations in this exemption and the procedures outlined in the operating documents, the conditions and limitations herein take precedence and must be followed. Otherwise, the operator must follow the procedures as outlined in its operating documents. The operator may update or revise its operating documents. It is the operator's responsibility to track such revisions and present updated and revised documents to the Administrator or any law enforcement official upon request. The operator must also present updated and revised documents if it petitions for extension or amendment to this grant of exemption. If the operator determines that any update or revision would affect the basis upon which the FAA granted this exemption, then

the operator must petition for an amendment to its grant of exemption. The FAA's UAS Integration Office (AFS−80) may be contacted if questions arise regarding updates or revisions to the operating documents.

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

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

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

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

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

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

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

training operations may only be conducted during dedicated training sessions. During training, proficiency, and experience-building flights, all persons not essential for flight operations are considered nonparticipants, and the PIC must operate the UA with appropriate distance from nonparticipants in accordance with 14 CFR § 91.119.

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

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

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

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

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

20. The PIC is prohibited from beginning a flight unless (considering wind and forecast weather conditions) there is enough available power for the UA to conduct the intended operation and to operate after that for at least 5 minutes or with the reserve power recommended by the manufacturer if greater.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Sincerely,

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

Enclosures

DAY PITNEY LLP

BOSTON CONNECTICUT NEW JERSEY NEW YORK WASHINGTON, DC

RICHARD H. BROWN
Attorney at Law
1 Jefferson Road
Parsippany, New Jersey 07054
T: (973) 966-8119 F: (973) 206-6129
rbrown@daypitney.com

March 4, 2015

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

Re: Exemption Request Section 333 of FAA Reform Act and Title 14, Code of Federal Regulations (14 CFR): §§ 61.113(a) and (b); 91.119; 91.121; 91.151(a); 91.405(a); 91.407(a)(1); 91.409(a)(2); and 91.417(a) and (b)

Dear Sir or Madam:

Pursuant to 14 CFR part 11 and Section 333 of the FAA Modernization and Reform Act of 2012 ("the Reform Act"), Principia, Inc. (referred to herein as "Applicant"), developer and operator of small Unmanned Aircraft Systems ("sUASs") equipped to conduct aerial photography/filming operations for a range of business including insurance, real estate, agriculture, infrastructure inspection, and motion picture and television production, hereby applies for an exemption from the listed Federal Aviation Regulations ("FARs") to allow commercial operation of its sUAS, so long as such operations are conducted within and under the conditions outlined herein or as may be established by the FAA as required by Section 333.

As described more fully below, the requested exemption would permit the operation of sUAS under controlled conditions in airspace that is 1) limited, 2) predetermined, 3) controlled as to access, and 4) would provide safety enhancements to the already safe businesses presently using conventional aircraft. Approval of this exemption would thereby enhance safety and fulfill the Secretary of Transportation's (the FAA Administrator's) responsibilities to "…establish requirements for the safe operation of such aircraft systems in the national airspace system," Section 333(c) of the Reform Act.

The name and address of the Applicant is:

Principia, Inc.
Attn: George Finlay
71 South Orange Avenue
South Orange, NJ 07079
(917) 841-2362
george@principiainc.com

The Applicant requests exemption under the following Regulations:

14 CFR § 61.113(a) and (b)
14 CFR § 91.119
14 CFR § 91.121
14 CFR § 91.151(a)
14 CFR § 91.405(a)
14 CFR § 91.407(a)(1)
14 CFR § 91.409(a)(2)
14 CFR § 91.417(a) and (b)[1]

This exemption application is expressly submitted to fulfill Congress' 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 (NAS) before completion of the rulemaking required under Section 332 of the Reform Act. In making this determination, the Secretary is required to determine which types of unmanned aircraft system(s) (UASs) do not create a hazard to users of the NAS or the public or pose a threat to national security in light of: 1) the sUAS's size, weight, speed, and operational capability; 2) operation of the sUAS in close proximity to airports and populated areas; and 3) operation of the sUAS within visual line of sight (VLOS) of the operator.

If the Secretary determines that such vehicles "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." Reform Act § 333(a) and (c). The Federal Aviation Act expressly grants the FAA the authority to issue exemptions. This statutory authority by its terms includes exempting civil aircraft, as the term is defined under § 40101 of the Act, which includes sUAS, 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 United States Code (U.S.C.) § 44701(f). See also 49 U.S.C. § 44711(a), 49 U.S.C. § 44704, and 14 CFR § 91.203(a)(1).

Principia's sUAS is a rotorcraft, weighing 55 pounds or less including payload. It operates at an airspeed of no more than 55 knots and has the capability to hover and move in the vertical and horizontal planes simultaneously. It will be operated only within VLOS of the operator and will operate only within a secured area to ensure that the sUAS will "not create a hazard to users of the national airspace system or the public," Reform Act, Section 333(b).

Given the small size of the sUAS at issue and the secured environment within which it will operate, the applicant falls within that zone of safety (an equivalent level of safety) in which Congress envisioned that the FAA should, by exemption, allow commercial operations of UASs to commence immediately. Also due to the size of the sUAS and the restricted areas in which it will operate, approval of the application

[1] Applicant understands that if it satisfies the requirements under Section 333, then there is no need for relief under 14 CFR part 21 (airworthiness certificate), and under 14 CFR §§ 45.23(b) and 91.7(a). Applicant further understands that operation of sUAS does not require exemptions under 14 CFR § 91.9(b)(2) (civil aircraft marking and manual requirements) and based on the FAA memorandum "Interpretation regarding whether certain required documents may be kept on unmanned aircraft's control station." If the Administrator determines that the Applicant may be subject to those requirements, the Applicant reserves the right to supplement this request.

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 equivalent level of safety surrounding the proposed aerial photography/filming operations, and the significant public benefit, including enhanced safety, reduction in environmental impacts such as reduced emissions associated with allowing UASs for operations currently performed by larger manned aircraft, granting of the requested exemptions is in the public interest. Accordingly, Applicant respectfully requests that the FAA grant the requested exemption without delay.

Specific regulations for which relief is sought by the Applicant:

14 CFR § 61.113(a) and (b) Private Pilot Privileges and Limitations: Pilot in Command (PIC)

Sections 61.113(a) and (b) limit private pilots to non-commercial operations. Because the sUAS will not carry a pilot or passengers, the proposed operations can achieve the equivalent level of safety of current operations by requiring the PIC operating the aircraft to have a private pilot's license rather than a commercial pilot's license to operate this sUAS. Unlike a conventional aircraft that carries the pilot and passengers, this sUAS is remotely controlled with no living thing on board. The area of operation is controlled and restricted, and all flights are planned and coordinated in advance as set forth in the General Operations Manual (GOM). The level of safety provided by the requirements included in the GOM and Aircraft Flight Manual (AFM) exceeds that provided by a single individual holding a commercial pilot's certificate operating a conventional aircraft. The risks associated with the operation of the sUAS are so diminished from the level of risk associated with commercial operations contemplated by part 61 when drafted, that allowing operations of the sUAS as requested with a private pilot as the PIC exceeds the present level of safety achieved by 14 CFR § 61.113(a) and (b).

14 CFR § 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. As this exemption request is for a sUAS that is a helicopter and requests the authority to operate at altitudes up to 400 feet above ground level (AGL), or for filming operations not more than 200 feet above an elevated platform from which filming is planned, an exemption may be needed to allow such operations. As set forth herein, except for the limited conditions stated in the GOM, the sUAS will never operate at higher than 400 feet AGL. It will be operated in a restricted area with security perimeter, where buildings and people will not be exposed to operations without their consent.

The equivalent level of safety will be achieved given the size, weight, and speed of the sUAS as well as the location where it will be 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 participants in the aerial photography/filming operations area, all affected individuals will be aware of the planned flight operations as set forth in the GOM. Compared to flight operations with aircraft or rotorcraft weighing far more than the maximum 55 pounds proposed herein and the lack of flammable fuel, any risk associated with these operations is far less than those presented with conventional aircraft operating at or below 400 feet AGL. In addition, the low-altitude operations of the sUAS will help ensure separation between these aerial photography/filming operations and the operations of conventional aircraft that must comply with Section 91.119.

14 CFR § 91.121 Altimeter Settings

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." As the sUAS does not have a barometric altimeter, but instead a GPS altitude readout, an exemption may be needed. An equivalent level of safety will be achieved by the operator, pursuant to the GOM and AFM, confirming the altitude of the launch site shown on the GPS altitude indicator before flight.

14 CFR § 91.151(a) Fuel Requirements for Flight in Visual Flight Rules (VFR) Conditions

Section 91.151(a) 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 battery powering the Applicant's sUAS provides approximately 40 minutes of powered flight. To meet the 30-minute reserve requirement in 14 CFR § 91.151, sUAS flights would be limited to approximately 10 minutes in length. Given the limitations on the sUAS's proposed flight area and the location of its proposed aerial photography/filming operations within a predetermined area, a longer time frame for flight in daylight or VFR conditions is reasonable.

Applicant 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 sUAS 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 present the type of risks that Section 91.151(a) is intended to alleviate given the size and speed of the sUAS. Additionally, limiting sUAS flights to 10 minutes would greatly reduce the utility for the aerial photography/filming operations for which the exemption is sought.

Applicant submits that an equivalent level of safety can be achieved by limiting flights to 30 minutes or 25 percent of battery power, whichever happens first. This restriction would be adequate to return the sUAS 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 §§ 91.405(a); 91.407(a)(1); 91.409(a)(2); 91.417(a) and (b) Maintenance Inspections

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

Given that these sections and part 43 apply only to aircraft with an airworthiness certificate, these sections will not apply to the Applicant. Maintenance will be accomplished by the operator pursuant to the AFM and GOM. As provided in the GOM, the operator will ensure that the sUAS is in working order prior to initiating flight, perform required maintenance, and keep a log of any maintenance performed.

Limitations and conditions to which Principia agrees to be bound when conducting commercial sUAS operations under the requested exemption include those listed below:

AIRCRAFT

1. Operations authorized by this grant of exemption are limited to the following aircraft described in the attached AFM: DJI S1000 serial number Q2Q0021602, registration N68FG. Proposed operations of any other aircraft will require a new petition or a petition to amend this grant.

2. The sUAS will weigh less than 55 pounds (25 kg), including energy source(s) and equipment.

3. All aircraft operated in accordance with this exemption will 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 will be as large as practicable.

4. The sUAS may not be flown at an airspeed exceeding 55 knots.

5. The sUAS will be programmed to return to a predetermined location within the Security Perimeter to land or be recovered in the event manual control is lost.

MANUALS

1. The AFM and GOM will be maintained 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 either of those documents, the conditions and limitations herein take precedence and must be followed. Otherwise, Principia will follow the procedures as outlined in the AFM and GOM.

2. Principia will track revisions to the AFM and GOM and present updated and revised documents to the Administrator upon request. It will also present updated and revised documents if we petition for extension or amendment. If it determines that any update or revision would affect the basis for which the FAA granted this exemption, then it will petition for amendment to the exemption. The FAA's UAS Integration Office (AFS-80) will be contacted if questions arise regarding updates or revisions to the AFM and GOM.

CREW

1. Minimum crew for each operation will consist of pilot, visual observer (VO), and the camera operator. The VO may be used to satisfy the VLOS requirement as long as the PIC always maintains VLOS capability. The VO and PIC will be able to communicate verbally at all times.

2. The PIC will possess at least a private pilot certificate and at least a current third-class medical certificate. The PIC will 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. Prior to conducting commercial aerial photography/filming operations, the PIC will have accumulated and logged, in a manner consistent with 14 CFR § 61.51(b), a minimum of 25 hours of total time as a UAS rotorcraft pilot and at least 10 hours logged as a UAS pilot with a similar UAS type.

3. Prior to conducting commercial aerial photography/filming flight operations, the PIC will be required to have accumulated and logged, in a manner consistent with 14 CFR § 61.51(b), a minimum of five hours as an UAS pilot operating the make and model of UAS to be utilized for operations under the exemption and three takeoffs and three landings in the preceding 90 days.

4. During training, proficiency, experience-building, and takeoff and landing currency flights, all persons not essential for flight operations will be considered nonparticipants, and the PIC will be required to operate the sUAS with appropriate distance from nonparticipants in accordance with 14 CFR § 91.119.

5. Prior to any commercial aerial photography/filming flight operations, the crew will have successfully completed the qualification process detailed in the GOM. As this is a requirement stipulated by Principia, the test has been developed and implemented by a qualified person designated at the sole discretion of Principia. A record of completion of this qualification process will be documented and made available to the Administrator upon request.

6. Prior to commercial aerial photography/filming flight operations, a flight demonstration, administered by an operator-approved and qualified pilot will be successfully completed and documented. This documentation will be available for review upon request by the Administrator. Because the knowledge and airmanship test qualifications have been developed by the operator, and there are no established practical test standards that support a jurisdictional FAA Flight Standards District Office (FSDO) evaluation and approval of company designated examiners, Principia will conduct these tests in accordance with the GOM.

7. The documents required under 14 CFR §§ 91.9 and 91.203 will be available to the PIC any time the aircraft is operating. These documents will be made available to the Administrator or any law enforcement official upon request.

MAINTENANCE

1. If any part of the sUAS has undergone maintenance or alterations that affect operation or flight characteristics, for example, replacement of a flight critical component, then the entire sUAS will undergo a functional test flight in accordance with the GOM. The PIC who conducts the functional test flight will make an entry in the sUAS aircraft records of the flight, as required by the GOM.

2. The AFM will include updated current maintenance procedures, inspection requirements, and life limits for aircraft systems including servos, motors, propellers, electronic speed controllers, batteries, and remote control.

3. All technicians performing maintenance and inspection on the sUAS will meet technician qualification criteria developed by Principia and included in the GOM.

4. Each sUAS operated under this exemption will comply with all manufacturer safety bulletins.

5. The GOM includes procedures to document and maintain a record of the sUAS maintenance, preventative maintenance, alterations, status of replacement/overhaul of component parts, and the total time in service of the sUAS.

OPERATIONS

1. Prior to each flight, the PIC will inspect the sUAS to ensure it is in a condition for safe flight. If the inspection reveals a condition that affects the safe operation of the sUAS, the aircraft is prohibited from operating until the necessary maintenance has been performed and the sUAS is found to be in a condition for safe flight. The remote control will be included in the preflight inspection. All maintenance and alterations will be properly documented in the aircraft records.

2. Flights will be operated at an altitude of no more than 400 feet AGL, except for limited conditions outlined in the GOM. All altitudes reported to Air Traffic Control (ATC) will be in feet AGL.

3. The sUAS will be operated within 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 medical certificate.

4. Before conducting commercial aerial photography/filming flight operations, the radio-frequency spectrum used for operation and control of the sUAS will be checked to comply with Federal Communications Commission (FCC) or other appropriate government-oversight agency requirements.

5. Regarding distance from nonparticipating persons, the operator will ensure that no persons in open areas are allowed within 500 feet of the aircraft except those consenting to be involved and necessary for the aerial photography/filming operations. If barriers or structures are present that can sufficiently protect nonparticipating persons from debris in the event of an accident then the UA may operate closer than 500 feet to persons afforded such protection. 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.

6. Regarding the distance from participating persons, the GOM has safety mitigations for authorized and consenting production personnel. At all times, those persons must be essential to the aerial photography/filming operations. Because these procedures are specific to participating persons, no further FSDO or aviation-safety inspector approval will be considered necessary for reductions to the distances specified in the GOM, consistent with the manned aircraft procedures described in FAA Order 8900.1, V3, C8, S1.

7. Each sUAS operation will be completed within 30 minutes flight time or with 25% battery power remaining, whichever occurs first.

8. The sUAS will remain clear and yield the right of way to all other manned operations and activities at all times (including, but not limited to, ultralight vehicles, parachute activities, parasailing activities, hang gliders, etc.).

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

10. The sUAS will not be operated from any moving device or vehicle.

11. The sUAS will not be operated fewer than 500 feet below or fewer than 2,000 feet horizontally from a cloud or when visibility is less than three statute miles from the PIC.

12. The sUAS will not operate in Class B, C, or D airspace without written approval from the FAA. The sUAS will not operate within five nautical miles of the geographic center of a non-towered airport as denoted on a current FAA-published aeronautical chart unless a letter of agreement with that airport's management is obtained. The letter of agreement with the airport management will be made available to the Administrator upon request.

13. The sUAS will only operate only within a confined "Secured Area" as defined in the GOM, which requires the establishment of a "Security Perimeter" for the flight operations area.

14. A briefing will be conducted in regard to the planned operation prior to each day's flight activities. It will be mandatory that all personnel who will be performing duties within the boundaries of the safety perimeter be present for this briefing.

15. Accidents will be reported to the National Transportation Safety Board (NTSB) per instructions contained on the NTSB website: www.ntsb.gov. Further flight operations will not be conducted until the incident, accident, or transgression is reviewed by AFS-80 and authorization to resume operations is provided.

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

17. Applicant agrees that 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.

****

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 §§ 61.113(a) and (b); 91.119; 91.121; 91.151(a); 91.405(a); 91.407(a)(1); 91.409(a)(2), and 91.417(a) and (b) to operate commercially a sUAS (55 pounds or less) in aerial photography/filming operations.

Approval of exemptions allowing commercial operations of sUASs will enhance safety by reducing risk. Conventional manned flight operations, using jet or piston power aircraft, sometimes operate at low in close proximity to people and structures; and present the risks associated with vehicles that weigh approximately 6,000 pounds, carrying large amounts of fuel or other flammable liquid. Such aircraft must fly to and from the job location. In contrast, a sUAS weighing less than 55 pounds and powered by

batteries eliminates virtually all of that risk given the reduced mass and lack of combustible fuel carried on board. The sUAS is carried to the job location, not flown. 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 sUASs, weighing less than 55 pounds, conducted in accordance with the conditions outlined above, will provide an equivalent level of safety supporting the grant of the exemptions requested herein. These lightweight aircraft operate at slow speeds, close to the ground, and in a secured environment and, as a result, are safer than conventional operations conducted with 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. Photography/filming will be of people who have also consented to being photographed or otherwise have agreed to be in the area where the aerial photography/filming operations will take place. All operations will be compliant with applicable local and state laws.

The Applicant's request satisfies the criteria set forth in Section 333 of the Reform Act. The size, weight, speed, operating capabilities of the sUAS, the limitations on operations proximate to airports and populated areas, and the operation within VLOS do not create a hazard to users of the national airspace system and do not pose any national security threats or concerns. The foregoing easily meets the criteria for granting the requested exemptions allowing commercial operations of Applicant's sUAS pursuant to the GOM and AFM appended hereto.

Respectfully submitted,

/s/ Richard H. Brown

Richard H. Brown
Day Pitney LLP
Counsel for Principia, Inc.

John McGraw
John McGraw Aerospace Consulting, LLC
Agent for Principia, Inc.

Encls.

Glossary of Acronyms

AFM: Aircraft Flight Manual, also known as a Pilot's Information Manual; a document for a specific make and model laid out in the same format familiar to pilots in an FAA-approved PIH, Pilot Information Handbook. The 10 sections are: 1) General, 2) Limitations, 3) Emergency Procedures, 4) Normal Procedures, 5) Performance, 6) Weight and Balance, 7) Airplane and Systems Description, 8) Handling, Servicing, and Maintenance, 9) Supplements, and 10) Safety and Operational Tips.

AGL: above ground level; this is one of two ways in which pilots and air traffic control refer to altitude, and it is the most useful way for operations close to the ground.

ATC: Air Traffic Control

CFR: Code of Federal Regulations

FARs: Federal Aviation Regulations

FSDO: Flight Standards District Office

GOM: General Operations Manual; a document that details company-wide operating procedures not specific to one of the aircraft that company operates. It includes details on company organization, job responsibilities, and procedures for training, operating, maintenance, safety, and security.

NAS: national airspace system

NTSB: National Transportation Safety Board

PIC: Pilot in Command

sUAS: small unmanned aerial system, defined as 55 pounds (24 kg) or less

SVFR: special visual flight rules

UAS: unmanned aerial system, includes the ground control equipment as well as the aircraft itself

USC: United States Code

VFR: visual flight rules

VLOS: visual line of sight

VMC: visual meteorological conditions

VO: visual observer