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

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

May 13, 2015

Exemption No. 11579
Regulatory Docket No. FAA–2015–0371

Mr. Michael J. Mabin
President
Shutter Pilots, Inc.
1003 Gateway Avenue, Suite 2A
Bismarck, ND 58503

Dear Mr. Mabin:

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.

The Basis for Our Decision

By letter dated February 11, 2015, you petitioned the Federal Aviation Administration (FAA) on behalf of Shutter Pilots, Inc. (hereinafter petitioner or operator) for an exemption. The petitioner requested to operate an unmanned aircraft system (UAS) to conduct aerial imaging and computer animation operations to provide two-dimensional and three-dimensional visualization services to support various industries.

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

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

Airworthiness Certification

The UAS proposed by the petitioner are the DJI Phantom 2 Vision+ and 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, Shutter Pilots, 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, Shutter Pilots, 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 Phantom 2 Vision+ and 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 May 31, 2017, unless sooner superseded or rescinded.

Sincerely,

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

UNITED STATES OF AMERICA

DEPARTMENT OF TRANSPORTATION

FEDERAL AVIATION ADMINISTRATION

WASHINGTON, DC.

REGARDING THE PETITION FROM:

SHUTTER PILOTS, INC.,

FOR AN EXEMPTION SEEKING RELIEF FROM THE REQUIREMENTS OF

TITLE 14 OF THE CODE OF FEDERAL REGULATIONS (14 CFR) PART 21

SECTIONS 45.23(b), 61.113(a) and (b), 91.7(a), 91.9(b)(2), 91.103(b), 91.109, 91.119, 91.121, 91.151(a), 91.203(a) and (b), 91.405(a), 91.407(a)(1), 91.409(a)(2), and 91.417(a) and (b).

CONCERNING OPERATION OF SMALL UNMANNED AIRCRAFT SYSTEMS (sUAS)

PURSUANT TO SECTION 333 OF THE

FAA MODERNIZATION AND REFORM ACT OF 2012

Regulatory Docket No. _____

Submitted Electronically
on February 11, 2015

Shutter Pilots, Inc.
Michael J. Mabin, President
1003 Gateway Avenue, Suite 2A
Bismarck, ND 58503

Table of Contents

Glossary of Abbreviations & Terms

2D/3D	Two-Dimensional and Three-Dimensional
AGL	Above Ground Level
AMA	Academy of Model Aeronautics
C.F.R.	Code of Federal Regulation
COA	Certificate of Authorization
FAA	Federal Aviation Administration
FAR	Federal Aviation Regulation
GCS	Ground Control Station
NAS	National Airspace System
NOTAM	Notice to Airman
PIC	Pilot in Command
sUAS	Small, Unmanned Aircraft Systems
UA	Unmanned Aircraft
UAS	Unmanned Aircraft System
VLOS	Visual Line of Sight
VFR	Visual Flight Rules
VO	Visual Observer

List of Attachments

The following attachments are referenced in the request for exemption which follows. These documents provide additional evidence in support of Shutter Pilots' petition to the FAA.

Attachment A	Academy of Model Aeronautics (AMA) Safety Code
Attachment B	FlySafe Flight Checklists
Attachment C	Inspire 1 User Manual
Attachment D	Inspire 1 Safety Guidelines
Attachment E	Phantom 2 Vision+ User Manual
Attachment F	Phantom 2 Vision+ Quick Start Manual
Attachment G	Phantom Pilot Training Manual
Attachment H	Transport Canada Exemption Infographic

Exemption Request from Shutter Pilots, Inc.

February 11, 2015

United States Department of Transportation
Docket Operations
West Building Ground Floor Room W12-140
1200 New Jersey Ave., SE
Washington, DC 20590

Re: Exemption Request Pursuant To Section 333 of the FAA Modernization and Reform Act of 2012, Public Law 112-95 February 14, 2012

I, Michael J. Mabin, am writing on behalf of my company, Shutter Pilots, Inc., regarding the FAA Modernization and Reform Act of 2012 (Reform Act) and the procedures contained within 14 C.F.R. 11, with a request to be exempted from Part 21, as well as other sections of Title 14 of the Code of Federal Regulations, as described in the following pages. The requested exemption will allow Shutter Pilots to operate small, unmanned aircraft systems (sUAS) commercially in airspace regulated by the Federal Aviation Administration ("FAA").

My partners and I plan to combine our skills in aerial imaging and computer animation to provide two-dimensional (2D) and three-dimensional (3D) visualization services to support various industries including, but not limited to, property development, historic preservation and accident reconstruction. For example, our specialized services will enable property developers and general contractors to pre-visualize their construction projects by adding 2D and 3D structural models to aerial images and videos. Our service offerings will also enable historians and curators to visually recreate historic sites, events and other attractions. Additionally, our services will assist insurance and law enforcement professionals with reconstructing accident scenes using 2D and 3D aerial simulations.

Recognizing the tremendous need, as well as the many public benefits associated with offering such services, my partners and I are moving forward with our business plans, which include seeking and securing an exemption to commercially operate our sUAS in accordance with the FAA's safety standards and regulations.

We believe the operations proposed in the petition which follows will fully qualify for approval under Section 333 of the Reform Act. Under this proposal, Shutter Pilots would be permitted to use small, unmanned aerial systems (sUAS) under controlled conditions in airspace that is: (1) limited; (2) predetermined; (3) controlled as to access, and; (4) would provide an increased level of safety beyond that existing when fixed or rotor wing aircraft are used to accomplish the same purpose.

Shutter Pilot will utilize small, multi-rotor quad copters, equipped with digital cameras. The units will be operated under normal, daytime conditions at a speed of no more than 30 knots. The sUAS will always be operated within the visual line-of-sight (VLOS) of the pilot in command (PIC) and within a controlled area. Such operations will insure that the sUAS will "not create a hazard to users of the National Airspace System or the public."

Our petition for exemption is submitted under the authority of the FAA Modernization and Reform Act. Under this Act, Congress directed the FAA "to safely accelerate the integration of civil unmanned aircraft systems into the national airspace system." Under Section 333 of this law, the Reform Act directed 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.

According to the Reform Act, the Secretary has the authority to grant exemptions from its safety regulations and minimum standards when a requested exemption is deemed to be in the public interest. Anyone requesting an exemption must explain the reasons why the exemption: (1) would benefit the public as a whole, and; (2) would not adversely affect safety. Based on this exemption process, I submit the following petition for your consideration.

Contact information:

Shutter Pilots, Inc.
1003 Gateway Ave., Suite 2A
Bismarck, ND 58503

Michael J. Mabin, President
Phone: (701) 319.5500 Fax: (701) 250-1788
E-mail: mmabin@shutterpilots.com

Proposed Small, Unmanned Aircraft Systems (sUAS)

Shutter Pilots proposes to utilize a DJI PHANTOM 2 Vision+ and a DJI INSPIRE 1 for capturing digital images. These multi-rotorcraft sUAS have four motors and propellers in a quadcopter configuration weighing roughly 3 to 7 pounds, including camera and payload.

Both units are equipped with an onboard computer stabilization controller and Global Positioning System (GPS). The PHANTOM 2, as well as the INSPIRE 1, provide the pilot in command (PIC) with an ability to hover and move in vertical and horizontal planes, both independently and simultaneously.

The proposed aircraft also feature a software application that allows the PIC a means of monitoring the flight's performance via a smart phone or tablet. For example, the app provides the PIC with a real time display of the altitude, battery life, GPS connections and camera view.

DJI Phantom 2 Vision+

Shutter Pilots seek an exemption to operate the DJI PHANTOM 2 Vision+ for compensation or hire. This sUAS features a quad rotor, unmanned aircraft and a handheld ground control station. The PHANTOM 2 has a maximum gross weight of approximately 2.8 pounds, diameter (rotor span) 23.75 inches, width of 12.5 inches, and height of 8.1 inches. The sUAS is equipped with four rotors driven by a lithium polymer battery with electric motors.	**DJI Phantom 2 Vision+** 

Here is an overview of the proposed aircraft specifications. Additional design and operational specifications are contained in the DJI PHANTOM 2 Vision+ Operating Manual (Attachment E).

Weight (Battery & Propellers included): 1242g
Hover Accuracy (Ready to Fly)-Vertical: 0.8m; Horizontal: 2.5m
Max Yaw Angular Velocity: 200°/s Max Tilt Angle: 35°
Max Ascent / Descent Speed-Ascent: 6m/s; Descent: 3m/s
Max Flight Speed: 15m/s (not recommended)
Diagonal Length (motor to motor distance): 350mm
Supported Battery-DJI 5200mAh LiPo rechargeable battery

DJI Inspire 1

Shutter Pilots seek an exemption to operate its DJI INSPIRE 1 for compensation or hire within the national airspace system ("NAS"). The INSPIRE 1 is a remote-controlled, unmanned aircraft with a transportable ground station. Is has a gross weight of approximately six and one half (6.75) pounds and dimensions of 438 x 451 x 301 mm.	**DJI Inspire I** 

Here is an overview of the proposed aircraft specifications. Additional design and operational specifications are contained in the DJI INSPIRE I Operating Manual (Attachment C).

Aircraft Model: Inspire 1, Model T600
Weight (Battery Included): 2935 g (6 lbs., 7.5 oz.)
Hovering Accuracy (GPS mode) Vertical: 0.5 m
Horizontal: 2.5 m
Max Angular Velocity Pitch: 300°/s
Yaw: 150°/s
Max Tilt Angle 35°
Max Ascent Speed 5 m/s
Max Descent Speed 4 m/s
Max Speed 22 m/s (ATTI mode, no wind)
Max Flight Altitude 4500 m
Max Wind Speed Resistance 10 m/s

Shutter Pilots will submit a Certificate of Authorization (COA) application for each sUAV as part of the exemption sought by this Petition.

The specific sections of Title 14 of the Code of Federal Regulations from which Shutter Pilots requests exemption:

Shutter Pilots, Inc., requests an exemption from Part 21, Subpart H; and Sections 45.23(b), 61.113(a) and (b), 91.7(a), 91.9(b)(2), 91.103(b), 91.109, 91.119, 91.121, 91.151(a), 91.203(a) and (b), 91.405(a), 91.407(a)(1), 91.409(a)(2), and 91.417(a) and (b) of Title 14, Code of Federal Regulations.

The Extent of Relief Shutter Pilots Seeks and the Reason it seeks such Relief:

<u>14 C.F.R. Part 21, Subpart H: Airworthiness Certificate, and 14 C.F. R. Section 91.203(a) & (b): Carrying Civil Aircraft Certification and Registration</u>

We are seeking an exemption from 14 C.F.R. Part 21, Subpart H, which establishes the procedural requirements for issuing and displaying airworthiness certificates as required by 14 C.F.R. Sections 91.203 (a) & (b). At the present time, no such certificates are available to be issued for airworthiness of the sUAS devices utilized by Shutter Pilots. Furthermore, the small size of the aircraft, coupled with the limited surface area, makes it impractical to display such documentation on the sUAS itself. Also, since the sUAS is unmanned, it is unnecessary to display a certificate for passengers or crew as required by Section 91.203(b). Furthermore, due to the size, weight, speed and limited operating area associated with these aircraft, we request the FAA determine that these aircraft meet the conditions of Section 333.

Equivalent Level of Safety

We contend that granting this exemption will not adversely affect safety or pose a threat to national security for the following reasons:

- The sUAS to be operated by Shutter Pilots weigh less than 7.0 lbs. fully loaded, carry neither a pilot nor passenger, carry no explosive materials or flammable liquid fuels, and operate exclusively within a secured and controlled area.

- Our proposed operations will be controlled and monitored by the Pilot in Command (PIC) in accordance with the Operator's Manuals (Attachments C and E). An equivalent level of safety will be achieved by keeping the Operator's Manual documents at the ground control point where the Pilot in Command (PIC) flying the sUAS will have immediate access to assure airworthiness.

The FAA has issued numerous exemptions to this regulation. Examples of such exceptions include: #9565, #9665, #9789, #9789A, #9797, #9797A, #9816A, and #10700.

14 C.F.R. Section 45.23(b): Aircraft Marking and Identification Requirements

We are seeking an exemption from the aircraft marking and identification requirements of 14 C.F.R. Section 45.23(b). We believe this exemption is justified because the proposed sUAV has no entrance to a cabin, cockpit, or pilot station on which the required words could be placed. Also the required size of the letters being 2" – 6" high exceeds the available space on the PHANTOM 2 and INSPIRE 1. Due to these limitations, we request relief from the associated marking and identification requirements of Section 45.23(b).

Equivalent Level of Safety

We propose an equivalent level of safety for exemptions to the aircraft marking and identification requirements of §§ 45.23(b) by having the PHANTOM 2 and INSPIRE 1 identified on the aircraft 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 with the largest lettering possible. Additionally, Shutter Pilots will ensure compliance with any future requests of sUAS marking by the FAA.

The FAA has issued the following exemptions to the aircraft marking requirements of Section 45.23(b): #10700, #8738, #10167 and #10167A.

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

We are seeking an exemption from private pilot regulation on the basis that the PHANTOM 2 and INSPIRE 1 will be operated within controlled and restricted areas, and all flights will be planned and coordinated in advance, thus making a commercial pilot certificate unwarranted.

Additionally, the skills required to fly a sUAS such as the ones proposed by Shutter Pilots are considerably different than the skills required of a certified commercial pilot.

Furthermore, Section 61.113(a) limits private pilots to being in command of non-commercial flights. Section 61.113(b) provides for exceptions that allow a private pilot to command an aircraft without passengers or property, in connection with business or employment if "the flight is only incidental to that business or employment." This exception likely does not apply to the proposed operations under this petition for exemption since the flights are not incidental to the proposed aerial photography and video, but rather essential to it. Therefore, this petition seeks an exemption to § 61.113(a)'s commercial limitation and/or § 61.113(b)'s requirement that the flight be incidental to the business to benefit from the exception.

Equivalent Level of Safety

Since our PHANTOM 2 and INSPIRE 1 aircraft will not carry a pilot or passengers, the proposed operations can achieve the equivalent level of safety to § 61.113 (a) and (b), by requiring the PIC operating the sUAS to have training on operating the sUAS as defined in the PHANTOM 2 and INSPIRE 1 operations' manuals (Attachments C and E) and Pilot Training and Safety Guides (Attachments D and G).

Unlike a conventional aircraft that carry a pilot and passengers, the PHANTOM 2 and INSPIRE 1 are remotely controlled with no passengers on board. Furthermore, the risks associated with the operation of these sUAS are greatly reduced from the level of risk associated with commercial flight operations involving full-sized aircraft.

Lastly, Shutter Pilot's PIC will have the final authority to abort any flight operation in the interest of safety. Abort signals will be determined ahead of time along with the observer. In the event of signal loss, power loss, or mechanical failure, the PIC will keep the safety of property and people as the highest priority. The aircraft may be crashed, or destroyed, in the attempt to maintain safety.

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

We are seeking an exemption from 14 C.F.R. § 91.7(a), which requires that a civil aircraft be certified in an airworthy condition to be operated. Since there is currently no airworthiness certificate to be issued for the proposed sUAS, no FAA regulatory standard currently exists for determining airworthiness.

Equivalent Level of Safety

An equivalent level of safety will be provided by following the proposed sUAS operation's manuals for maintenance. Furthermore, the PIC will conduct thorough pre- and post-flight checklists (Attachment B) to assure airworthiness of the aircraft. The FAA has issued the following exemptions to this regulation: #8738, #9299, #9299A, #9565, #9565B, #10167, #10167A, #10602, #32827, and #10700.

14 C.F. R. Section 91.9(b)(2): Civil Aircraft Flight Manual in the Aircraft

We are seeking an exemption from Section 91.9(b)(2) which requires a flight manual be carried onboard all civil aircraft. Given its small size and load capacity, the proposed sUAS (PHANTOM 2 and INSPIRE 1) have no ability to carry such a manual on the aircraft itself, not only because there is no pilot on board, but because there is simply no room to carry such an item on the proposed aircraft.

Equivalent Level of Safety

This requirement can be equally satisfied by keeping a copy of the sUAS (PHANTOM 2 and INSPIRE 1) operations/user manuals at the ground control point where the pilot flying the sUAS will always have immediate access to these documents. Thus, we request an exemption from § 91.9(b)(2)'s flight manual requirements, on the basis that the sUAS manuals be available at the control point during each operation. The FAA has issued the following exemptions to this regulation: #8607,#8737, #8738, #9299, #9299A, #9565, #9565B, #10167, #10167A, #10602, #32827, and #10700.

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

We are seeking an exemption from Section 91.103, which requires a PIC to become familiar with specific information before each flight, including information contained in the FAA-approved Flight Manual on board the aircraft. Since an approved FAA flight manual is not available for the proposed sUAS, an exemption is being sought.

Equivalent Level of Safety

An equivalent level of safety will be provided by adopting and conducting a comprehensive pre-flight checklist as part of each flight (Attachment B). The PIC will take all actions, including reviewing weather, flight battery requirements, landing and takeoff distances, and aircraft performance data, before initiating any and all flights. Furthermore, a briefing will be conducted by the PIC with the visual observer/camera operator and all others involved in the production activities.

14 C.F.R. Section 91.109: Flight Instruction

We are seeking an exemption from 14 C.F.R. § 91.109, which 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. Remote-controlled aircraft, by their design, do not have fully functional dual controls as a norm. Instead, flight control is accomplished through the use of a control unit that communicates with the sUAS via radio frequencies. Duel control is technically feasible, but not standard for sUAS.

Equivalent Level of Safety

Given the relatively small size and slow speed of the proposed sUAS, an equivalent level of safety training and flight instruction can still be performed without dual controls because no pilot or passengers are aboard the sUAS, and all persons will be a safe distance away should the sUAS experience any difficulties during flight instruction.

The FAA has approved exemptions for flight training without fully functional dual controls for a number of aircraft and for flight instruction in experimental aircraft. A representative sampling of such exemptions include #5778K & #9862A.

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

We are seeking an exemption from the minimum safe altitude requirements of 14 C.F.R. § 91.119. This section establishes the minimum safe altitudes under which aircraft may not operate, including 500 feet above the surface and away from any person, vessel, vehicle, or structure in non-congested areas. Section 91.119(d) already allows helicopters to be operated at less than the minimums prescribed, assuming the pilot operating the helicopter complies with routes and altitudes assigned for helicopters by the FAA.

We anticipate that our sUAS will routinely need to be operated within a range of approximately 50 - 100 feet from the subject(s) being photographed or recorded. Accordingly, due to the nature of our proposed operations, the PIC and the designated observer may, at times, be less than 500 feet away from structures during the operation, and an exemption is therefore required. Lastly, we will operate our sUAS below 300 feet above ground AGL at all times.

Equivalent Level of Safety

When compared with flight operations involving aircraft weighting more than the maximum 55 lbs., along with the lack of flammable fuel, any risk associated with our proposed operations are far less than those presently conducted with conventional aircraft.

A comparable level of safety will be achieved based on the small size, light weight, and relatively slow speed of our proposed sUAS, as well as the controlled locations where the aircraft will be operated. Our PHANTOM 2 and INSPIRE 1 will routinely be operated in a restricted area, where people will not be exposed to operations without their pre-approved consent. No flight will be taken without the permission of the property owner and/or local officials. Because of the advance notice to the property owner and participants, all affected individuals will be aware of the planned flight operations. Furthermore, by operating at such low altitudes, our proposed sUAS will not interfere with other aircraft that are subject to the minimum safe altitude regulations.

14 C.F. R. Section 91.121: Altimeter Settings

We are seeking an exemption from 14 C.F.R. Section 91.121, which requires a person operating an aircraft to maintain cruising altitude or flight level by reference to an altimeter that is set to the elevation of the departure airport or barometric pressure. We are requesting an exemption to this requirement because the proposed sUAS does not have a barometric altimeter. Instead, the PHANTOM 2 and INSPIRE 1 use GPS-based altitude display systems.

Equivalent Level of Safety

An equivalent level of safety will be achieved by following the procedures contained in the PHANTOM 2 and INSPIRE 1 Operation's Manuals (Attachment C and E). As prescribed in these Manuals, the operator will confirm the altitude of the launch site shown on the GPS altitude indicator before flight. Furthermore, the PIC will use the GPS altitude indicator to constantly monitor the sUAS's height, thus ensuring operation at safe altitudes.

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

We are seeking an exemption from 14 C.F.R. § 91.151(a)'s fuel requirements for flights conducted under visual flight rules (VFR) conditions. Unlike civil aircraft, the proposed sUAS is battery-powered, not fuel powered. Therefore, the requirements under Section 91.151(a) are not applicable to the PHANTOM 2 or INSPIRE 1 aircraft. The battery powering the proposed sUAS only has approximately 20-30 minutes of powered flight, therefore an exemption from the 30-minute reserve requirement is necessary. Additionally, we are not planning, nor proposing to fly our PHANTOM 2 or INSPIRE 1 at night.

Equivalent Level of Safety

An equivalent level of safety will be achieved by limiting our flights to under 25 minutes or 30% of battery power, whichever happens first. The proposed sUAS is programmed to automatically issue two "low battery" alerts – one at 30% power and one at 15% power. We will land either before or upon hearing the first alert that is issued at 30% power remaining. This restriction will be more than adequate to return our sUAS to its planned landing zone from anywhere within its limited operating area. Operating the PHANTOM 2 and INSPIRE 1 with less than 25 minutes of reserve battery does not compare to the type of risks that Section 91.151(a) was intended to alleviate given the size and speed of the sUAS. Furthermore, operation will be limited to controlled areas where only people and property owners, or official representatives who have signed waivers, will be allowed.

This request for exemption falls within the scope of prior exemptions. A representative sample of such exemptions include: #10673, #2689F, #5745, #10673, and #10808.

14 C.F. R. Section 91.405(a), 407(a)(1), 409(a)(2), 417(a) & (b): Maintenance Inspections

We are seeking an exemption from the maintenance inspection requirements of 14 C.F.R. §§ 91.405(a); 91.407(a)(1); 91.409(a)(2); 91.417 (a) & (b). These regulations specify maintenance and inspection standards are only applicable to aircraft with an airworthiness certificate. Since the proposed sUAS will not have such a certificate, an exemption to this regulation is required.

Equivalent Level of Safety

An equivalent level of safety will be achieved because maintenance and inspections will be performed in accordance with the PHANTOM 2 and INSPIRE 1 Operation's Manuals. As provided in these manuals, the operator will ensure that the proposed sUAS aer in proper working condition prior to initiating flight.

We will routinely perform required maintenance and keep a log of any maintenance required. As the operator, we are most familiar with the aircraft and best suited to maintain the aircraft in an airworthy condition to provide the equivalent level of safety.

If mechanical issues arise, our sUAS will land immediately. Additionally, the UA's small size, carrying capacity, and the fact that flight operations will only take place in restricted areas for periods of time not to exceed 25 minutes or until 30% battery power remains, create less risk than the same factors associated with conventional fixed-wing aircraft and rotorcraft performing the same operation.

How Shutter Pilots Request will benefit the Public as a Whole:

Granting Shutter Pilot's exemption will benefit the overall public interest in the following ways:

- It will fill an emerging need in society for the provision of 2D and 3D aerial imaging services that provide businesses and professionals with realistic visualizations of both past and projected scenes. For example, it will provide numerous industries with new and innovative ways to visualize their property development projects -- whether it's for construction projects, historical preservations, accident investigations or other yet-to-be determined needs.

- The use of 2D and 3D modeling, animation and rendering has been used for decades in manufacturing, product development and creative services. As these visually-advanced techniques are combined with aerial imaging, Shutter Pilots will enhance the quality of the tools and outcomes available to clients in need of such services.

- The work products which will be produced by Shutter Pilots will provide other aerial imaging companies with examples for how they too can fill this emerging need. The provision of 2D and 3D solutions using aerial imagery will continue to grow as the FAA opens the door to other aerial imaging providers who abide by high standards of safety and quality.

Beyond the specific benefits associated with providing 2D and 3D solutions using aerial imagery, the granting of Shutter Pilot's exemption request will also provide the following general public benefits:

- The operation of ultra-light, UAS aircraft significantly improves public safety and reduces risks by alleviating human exposure to the dangers associated with current aerial image capture methods -- namely, full-size helicopters. The public's interest is also advanced by reducing human exposure to death or serious injury associated with manned aircraft performing such services.

- The light-weight UAS aircraft proposed by Shutter Pilots are battery powered. Thus, unlike civil aircraft, they create no emissions. Furthermore, if a small UAS such as the one proposed by Shutter Pilots would crash, there would be no fuel to ignite or explode. With these factors in mind, the public's interest is advanced by minimizing the ecological impact of an accident and by reducing human exposure to potentially harmful emissions associated with manned aircraft.

- There is also a financial benefit to the public. Current methods of capturing aerial imagery are expensive, and oftentimes cost-prohibitive for many individuals and organizations. Granting exemptions such as the one proposed by Shutter Pilots will make such services affordable to a wider group of prospective customers.

- Approval will help fulfill Congress' goal in passing Section 333 of the Reform Act, namely, the FAA Administrator's assessment of whether certain UAS may operate safely in the National Airspace System before completion of the rulemaking required under Section 332 of the Reform Act.

- Lastly, the current methods of capturing aerial imagery are limited in terms of accessing certain spaces. For example, flying traditional aircraft at low levels or in populated areas puts the general public at increased risks of harm. The small UAVs such as the PHANTOM can fly safely in populated areas under controlled situations.

Reasons why Shutter Pilots Exemption will not adversely Affect Safety, or how the Exemption will Provide a Level of Safety at least Equal to the Existing Rule

Shutter Pilots offer the following summary of its proposed operations to ensure, at a minimum, an equivalent level of safety to operations conducted under current regulatory guidelines.

Pilot in Command (PIC) and Visual Observer (VO)

All members of Shutter Pilot's flight crew, including PIC and VO, will have an understanding of, and comply with, Title 14 Code of Federal Regulations, and/or Agency directives and regulations, applicable to the airspace where the sUAS will operate. More specifically:

- Minimum crew for each operation will consist of two operators: the UAS pilot in command (PIC) and a visual observer (VO).
- All flights will be conducted within visual line-of-sight (VLOS) of the pilot in command (PIC), as well as the visual observer, and will not create a hazard to users of the National Airspace System (NAS) or the public.
- The sUAS pilot will be the Pilot in Command (PIC). Shutter Pilots will require its PIC to be a FlySafe certified pilot.
- As a FlySafe certified operator, Shutter Pilot's PIC will log a minimum of 8 flights per month to maintain proficiency. If weather or other conditions prohibit this level of flight time, the PIC will fulfill the requirement by use of a computer simulator (RealFlight 7.0 software with controller).
- As a FlySafe certified operator, Shutter Pilot's PIC will maintain membership in the Academy of Model Aeronautics (AMA) organization, which will include no less than $1 million general liability coverage involving any property or personal incidents.
- A briefing of the flight crew will be conducted by the PIC in regards to the planned sUAS operations prior to each flight. It will be mandatory that all personnel who will be performing duties within the safety perimeter be present for this briefing.
- The UAS pilot and visual observer will have been trained in operation of the PHANTOM 2 and INSPIRE 1 generally, and will have received up-to-date information on the particular sUAS to be operated, as required in the Operations Manuals.
- The PIC and VO will be able to communicate verbally at all times.

Operations of sUAS

- The sUAS will remain clear and yield the right of way to all other manned aviation operations and activities at all times.
- Flights will be operated at an altitude of no more than 300 feet above ground level, and the radius distance from the controller to the sUAS will not exceed 1,000 feet.
- The sUAS will stay at least 100 feet away from people, animals, buildings, structures and vehicles not involved in the project operation.
- The PHANTOM 2 and INSPIRE 1 will be operated under normal conditions, only during daylight hours, at speeds of 5 to 30 knots.

- If the sUAS loses communications or loses its GPS signal, it will return to a pre-determined location within the planned operating area or be recovered.
- The sUAS PIC must abort the flight in the event of unpredicted obstacles or emergencies in accordance with Shutter Pilot's safety guidelines.
- Maximum total flight time for each operational flight will be 25 minutes. Flights will be terminated at 30% battery power reserve should that occur prior to the 25-minute limit. Additionally, a minimum of one reserve battery will be kept fully charged and available at all times.
- The pilot will establish takeoff and landing zones by a space no smaller than ten (10) feet by ten (10) feet, and clear of overhead and lateral obstructions. The PIC will also check the area to determine if there are any potential radio frequencies or electrical transmissions that could interfere with the safe operation of the aircraft.
- Written and/or verbal permission from the relevant property holders will be obtained while gathering digital imagery.
- 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.
- A log book will be kept for each flight to document routine matters such as the flight date, purpose, weather conditions and any maintenance issues or unexpected adverse incidents.
- The pilot will operate the PHANTOM 2 and INSPIRE 1 in safe environments that are strictly controlled, away from power lines, lights, airports and populated areas.
- The pilot will contact respective airports if operations will be within 5 nautical miles to advise them of the location, estimated flight time and elevation of flight.
- All operations will be conducted over private or controlled-access property with permission from the landowner or authorized representative.
- We will obtain a Certificate of Waiver for Authorization (COA) before conducting any operations. Shutter Pilots will also request a Notice to Airmen (NOTAM) when required between 48 to 72 hours prior to the operation.
- Any incident, accident or flight operation that transgresses the lateral or vertical boundaries of the operational area as defined by the applicable COA will be reported to the FAA's UAS Integration Office (AFS-80) with 24 hours. Accidents will be reported to the National Transportation Safety Board (NTSB) per instructions contained on the NTSB website: www.ntsb.gov.

Maintenance of sUAS

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

- Any sUAS that has undergone maintenance or alterations that affect the sUAS operation or flight characteristics will undergo a functional test flight. The PIC who conducts the functional test flight will make an entry in the sUAS aircraft logbook of the flight.
- Shutter Pilots will follow the manufacturer's sUAS aircraft/component, maintenance, overhaul, replacement, inspection and life limit requirements.

Shutter Pilots safety protocols will provide a level of safety at least equal to existing rules and, in some instances, greater than existing rules.

A summary the FAA may publish in the Federal Register:

Shutter Pilots, Inc., requests an exemption from Part 21 and §§ 45.23(b), 61.113(a) and (b), 91.7(a), 91.9(b)(2), 91.103(b), 91.109, 91.119, 91.121, 91.151(a), 91.203(a) and (b), 91.405(a), 91.407(a)(1), 91.409(a)(2), and 91.417(a) and (b) of Title 14, Code of Federal Regulations.

The proposed exemption will allow Shutter Pilots to operate its small, unmanned aerial systems (sUAS) as a safe and cost effective means of capturing digital imagery (still photographs and video footage) in providing two-dimensional (2D) and three-dimensional (3D) visualization and animation services to support various industries including, but not limited to, property development, historic preservation and accident reconstruction. These specialized services include, but would not be limited to, the following examples:

- Providing property developers, engineers and architects with a new way to pre-visualize their construction projects by adding 2D and 3D building models to aerial images and videos.

- Providing historians, curators and tribal nations (e.g., Alaska Native and American Indian tribes) with a new way to visually recreate archeology sites, historic events or other occurrences of past significance.

- Providing insurance and legal professionals with a new way of reconstructing accident scenes using 2D and 3D aerial simulations.

All proposed aerial imaging operations would be conducted by Shutter Pilots under controlled conditions in airspace that is: 1) limited, 2) predetermined, and 3) access controlled.

Additional Background Information to Support Shutter Pilot's Request:

Shutter Pilots, Inc., is a small, minority-owned company incorporated in the State of North Dakota. The company's mission is to provide innovative aerial imaging solutions that inspire and advance the efforts of its clients and affiliates. The principal owner, Mike Mabin, is an enrolled member of the Turtle Mountain Band of Chippewa Indians and a long-time marketing and communications professional.

Having practiced photography, filmmaking and video production as both a hobby and a career for the past 40 years, Mabin has gained much recognition throughout North Dakota and beyond for his expertise in these fields. In recent years, he's also become well known for his recreational interests and experience in flying remote-controlled aircraft including a DJI Phantom II Vision+ and a DJI Inspire 1.

As a result of his background, Mabin has received numerous requests to capture aerial photos and videos for both personal and business-related purposes. These requests have increased exponentially this past year as a result of the following developments:

- In the fall of 2014, Mabin attended a UAV/UAS conference and passed a written exam and flight test to become a FlySafe Certified UAS Pilot. This accomplishment was covered as a news story in several area publications, including The Bismarck Tribune and local Chamber of Commerce newsletter.

- In December of 2014, Mabin and a colleague were asked to present a workshop on the topic of "Aerial Image Capture" at the 2015 Dakota Digital Film Festival. This talk resulted in a feature story running in The Bismarck Tribune on January 25, 2015, titled "Drones Give Film a New View Point." (http://bismarcktribune.com/news/local/drones-give-film-a-new-viewpoint/article_c709ddce-a750-5e7e-b291-ba930f8cd781.html)

- Stories about drones are in the news almost daily at all levels – local, national and international. This increased media exposure has heightened the public's interest in the topic, as well as a desire to find ways to put the technology to use for their purposes.

Out of recognition and respect for the FAA's regulations that prohibit the use of UAVs for commercial purposes, Mabin and his associates have declined all requests for hire or compensation. Instead, they've offered to shoot photos or footage on a selective basis at no charge based on the approved projects needing to follow safety and procedural standards similar to those proposed in this exemption request.

Examples of the projects they've accepted on an amateur, no cost basis have included the following requests from reputable organizations:

- A local church planning to build a new high school and wanting to show potential donors where the new facility will be located and what it might look like once it's built
- A North Dakota state park desiring to capture video of a historical site and recreate a scene of what an Indian village looked like several hundred years ago
- A regional medical center wanting to capture pictures of a facility expansion project
- A regional zoo desiring to show an aerial video and 3D illustration of a proposed exhibit featuring Penguins and other exotic animals
- A Native American architect wanting to depict an aerial view of a planned expansion of a cultural center

These and other similar requests have prompted Mabin and his partners to seriously pursue aerial imaging, coupled with 2D and 3D visualization services, as an emerging business opportunity. The team doesn't consider this endeavor to be a new or passing fad. Instead, it has been a process in the making for a very long time.

Mabin's passion for photography began in 1974 after taking an audio-visual class in high school. This experience led him to a decision to pursue photography as a career. He attended the Minneapolis College of Art & Design where he majored in film and video production. He then sought and received a Bachelor's degree in Mass Communications and a Master's degree in Management from the University of Mary, Bismarck, North Dakota.

After graduating from college, Mabin worked for over 20 years as the Director of Marketing & Communications for a regional healthcare system. Then, in 2001, he acted on a long-time dream to start a business. His company is called Marketing & Advertising Business Unlimited, Inc. (MABU). With offices in both North Dakota and Virginia, MABU currently employs nearly two dozen graphic designers, creative writers, web developers and multimedia coordinators.

Having turned one passion into a career, Mabin also pursued another passion as a hobby - that being remote-controlled model aircraft. As an avid and long-time aviation enthusiast, he's flown various remote-controlled aircraft, including over 100 hours of flight time with the proposed sUAS.

As a member of the Academy of Model Aeronautics, Mabin and his partners are committed to following the National Model Aircraft Safety Code (Attachment A). The team is also committed to continually advancing their knowledge and skills, as evidenced by Mabin's attendance at the 2014 UAV/UAS FlySafe Conference where he became a certified FlySafe pilot after passing a written and practical flight exam.

Mabin is joined in the business by two other managing partners.

- His oldest son Alexander Mabin currently runs MABU's satellite office in Fredericksburg, Virginia. As MABU's Executive Vice President, he serves as a Senior Project Manager for our clients in the Washington, DC area including the U.S. Departments of Defense, Justice and Treasury, as well as the Smithsonian Institution and the National Congress of American Indians. Having graduated with a Bachelor's degree in International Studies, he was previously employed as a Senior Consultant with Booz Allen Hamilton's Government Division, advising high-level officials on financial and analytic decisions.

- The other partner in Shutter Pilots is Ed Sargeant. His broad-based experience includes working as a Technical Director in visual effects for several Hollywood movies, most notably Harry Potter & the Goblet of Fire and Batman Begins. Sargeant earned a Master of Arts in Drawing from Camberwell College of Art in

London, as well as a Bachelor of Arts in Computer Visualization and Animation from Bournemouth University, England. Sargeant currently serves as MABU's Director of Multimedia Solutions. Prior to joining MABU, he was an Instructor at Rasmussen College, Bismarck, ND, where he taught graphic design, multimedia production, e-learning tools, web development, and 3D/2D modeling and animation.

Mabin and his partners anticipate providing services primarily in North Dakota and surrounding states; however, over time, future requests may necessitate providing services across the nation and beyond, including Canada. Our headquarters are located within 2 hours of the Canadian border. If assignments take us to Canada, we will abide by Transport Canada's regulations governing small, unmanned aircraft (Attachment H).

The Shutter Pilots team is committed to positively advancing the aerial imaging industry. They are experienced business professionals looking to meet an emerging market need. They desire to do so in full compliance with all government laws and regulations, thus assuring the highest standards of safety and quality.

Respectfully Submitted,

Michael J. Mabin, President
Shutter Pilots, Inc.