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

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

May 22, 2015

Exemption No. 11681
Regulatory Docket No. FAA–2015–0717

Mr. Daniel P. Landry
Owner
LandBros Aerial Photography
P.O. Box 840240
New Orleans, LA 70184

Dear Mr. Landry:

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 16, 2015, you petitioned the Federal Aviation Administration (FAA) on behalf of LandBros Aerial Photography, L.L.C. (hereinafter petitioner or operator) for an exemption. The petitioner requested to operate an unmanned aircraft system (UAS) to conduct aerial photography of industrial and commercial facilities.

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 Phantom 2.

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, LandBros Aerial Photography, L.L.C. 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, LandBros Aerial Photography, L.L.C. 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 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

Enclosures

March 16, 2015

Docket Operations, M-30
U.S. Department of Transportation (DOT)
1200 New Jersey Avenue, SE
Room W12-140, West Building Ground Floor
Washington, D.C. 20590-0001

Subject: Petition to the FAA for Section 333 Exemption

LandBros Aerial Photography, L.L.C.

Dear Sir or Madam

LandBros Aerial Photography, L.L.C. hereby submits to the Federal Aviation Administration, pursuant to the FAA Modernization and Reform Act of 2012, an exemption petition, in accordance with Section 333 of the Act. LandBros Aerial Photography, L.L.C. requests to operate commercially its small unmanned aircraft system (UAS) which is currently regulated by the Federal Aviation Administration.

This letter provides requested information as listed in the FAA's "Public Guidance for Petitions for Exemptions Filed under Section 333" as described as of this date at the FAA website at https://www.faa.gov/uas/legislative_programs/section_333/how_to_file_a_petition/

LandBros Aerial Photography, L.L.C. is an experienced aerial photographer in the State of Louisiana. We are experienced in flying hobby helicopters for recreational purposes. We have flown small RC electric helicopters for over three (3) years without incident. Safety is our commitment with each flight. An extensive pre-flight safety checklist is completed and each flight is logged by the operator and verified by our spotter. Our exemption request would permit operation of ultra-light weight, unmanned (remote control operated) in tightly controlled and limited airspace. More company information can be viewed on the company website at www.LandBros.com .

Purpose for the Exemption:
LandBros Aerial Photography, L.L.C. desired to utilize an unmanned aircraft system (UAS), herein described, to accomplish aerial photography of industrial and commercial facilities.

Contact Information:

LandBros Aerial Photography
PO Box 840240
New Orleans, LA 70184
Office: 225-366-7005
Mobile: 225-803-6642
Email: danny.landry@landbros.com

List of Specific Sections of 14 CFR for which exemption is sought:

This listing matches the list on page 7 of the FAA's "Public Guidance for Petitions Filed under Section 333", Rev. 9/25/2014.

14 CFR 21, Subpart H –Airworthiness Certificates

14 CFR 61.113(a) and (b), Certification: Pilots, Flight Instructors, and Ground Instructors

14 CFR 91.7 (a), Airworthiness required for operation

14 CFR 91.103 (b) (2), Preflight action

14 CFR 91.105, Flight crewmembers at stations

14 CFR 91.109, Flight instruction

14 CFR 91.119 (c), Minimum safe altitudes

14 CFR 91.121, Altimeter settings

14 CFR 91.151, Fuel requirements for flights in VFR conditions

14 CFR 91.405 (a), Maintenance required

14 CFR 91.407 (a) (1), Operation after maintenance

14 CFR 91.409 (a) (2), Inspections

14 CFR 91.417 (a) and (b), Maintenance records

(FURTHER DETAILS ON PAGES 8-11)

In accordance with the outline given in the FAA's "Public Guidance for Petitions Filed under Section 333", the following information is provided for each numbered item listed in that guidance:

1. **Aircraft Description**

Design and Operational Characteristics:

- LandBros Aerial Photography, L.L.C. plans to operate a Phantom 2 comprised of an unmanned aircraft and a transportable ground station. This aircraft is a quad-copter design with gross weight (battery and propellers included) of 1000 g (2.205 lbs.).
- The Phantom 2 has a GoPro Hero 4 Black camera for capturing aerial still photographs and videos.
- It is equipped with four rotors that are driven by battery-powered electric motors. Maximum airspeed is 30 knots.
- The Phantom 2 includes a Failsafe Function. It activates if the Remote Control is powered off, the Phantom 2 has flown outside effective control range, the signal between the Phantom 2 and the Remote Control is blocked, or if there is interference causing a signal problem. When activated, the Failsafe Function automatically flies the Phantom 2 back to the Home Point (the start location) and lands it. If GPS mode is not active, the Failsafe Function will execute a controlled descend and automatic landing.
- Through the Phantom 2 Assistant software, each flight operation will be programmed with a maximum radius distance and maximum altitude from the Home Point such that the flight control system will limit operations to within the confines of the property to be surveyed for LandBros or LandBros' Clients. These performance limitation requirements are included in the UAS Operating Procedure contained in Appendix A herein.

Manufacturer's Documentation:

Detailed manufacturer's design information (current to this date) is contained the in the following manuals in the appendices at the end of this document:

- Appendix B – Phantom 2 Specifications
- Appendix C – Phantom 2 Quick Start Guide
- Appendix D – Phantom 2 User Manual
- Appendix E – Phantom 2 Pilot Training Guide

For ease of reference, the Phantom 2 is included in FAA Section 333 Exemption No. 11138 granted on January 5, 2015 to Douglas Trudeau, Realtor®.

2. Procedures for Ensuring UAS Is In a Condition Safe for Flight

Preflight Checks:

At a minimum, the following items will be checked prior to initiating any operation. (See Appendix A in this document for detailed procedures, LandBros Aerial Photography, L.L.C. Operating Procedure V1.1 3.4.15)

- Operations must be in daylight hours and under visual meteorological conditions (VMC).
- Area to be surveyed is defined on a plot plan drawing with path of flight and altitudes for each leg of the flight clearly marked.
- Flight path is at least 500 ft. from all non-participating persons, vessels, vehicles and structures unless protective barriers or structures are present, or permission is granted or such operations present no hazard to the Pilot in Command, the Visual Observer, trainees, and other essential persons.
- Flight plan and schedule has been reviewed with site leadership and communicated to all LandBros Aerial Photography, L.L.C. and Client personnel in the area.
- Remote control, smart battery, range extender, and ground station monitor are fully charged.
- Propellers are mounted correctly.
- Damping absorbers are in good condition, not dry-rotted or worn.
- Anti-drop kits have been mounted correctly.
- Micro-SD card has been inserted.
- Gimbal is functioning as normal.
- Compass has been calibrated.
- Flight radius and altitude limits have been set with the Phantom 2 Assistant software, not to exceed 400 ft. AGL altitude, and radius limited to the property boundaries of LandBros or LandBros Client site.
- The Visual Observer (VO) is stationed at the required initial observation point according to the flight plan and in view of the Pilot in Command (PIC) and has means for continual verbal communication.
- There are no inoperable components.
- All site required safety permits are approved in in possession of the PIC.
- Motors can start and function as normal.
- Flight Indicator Lights on the aircraft verify that the Home Point is set to current location.
- Record the Preflight Check, date and sign, and file it in the Equipment Inspection and Maintenance Record Book.

3. Radio Frequency (RF) Spectrum for Control

The Remote Control ground station operating frequency is 5.278 – 5.85 GHz and is FCC compliant with communication distance in an open area of 800 m (875 yds.)

Operating Frequency	5.728 GHz—5.85 GHz
Communication Distance (open area)	FCC Compliance: 800m
Receiver Sensitivity (1%PER)	-93dBm
Transmitter Power	FCC Compliance: 100mW
Working Voltage	120 mA@3.7V
Built-in LiPo Battery Working Current/Capacity	3.7V, 2000mAh

4. Qualifications for The Pilot in Command (PIC)

Logged Hours:

The PIC will have accumulated and logged a minimum of 25 hours of total time as a UAS rotorcraft pilot with a multi-rotor UAS prior to operations. The PIC will have also accumulated and logged a minimum of 5 hours as UAS pilot specifically operating the Phantom 2, prior to operations. The PIC will have accomplished, during dedicated training sessions, 3 take-offs and landings in the preceding 30 days. Training, proficiency, and experience-building flights in dedicated training sessions will be included in the accumulated and logged hours.

Emergency and Evasive Maneuvers:

The PIC will have demonstrated the ability to safely operate the Phantom 2 in a manner consistent with how it will be operated in surveying LandBros Client properties, including evasive and emergency maneuvers and maintaining appropriate distances from people, vessels, vehicles and structures. The logged hours referenced above will document this.

5. Description of Intended UAS Operations

- Operations will be restricted to Class G airspace.
- No operations will occur within 5 miles of a non-towered airport reference point as denoted on a current FAA-published aeronautical chart, unless a letter agreement with the airport's management is obtained, and the operation is conducted in accordance with a Notice to Airman (NOTAM) as required by the Certificate of Waiver or Operation (COA).
- The Phantom 2 will be utilized to survey industrial and commercial facilities. The use of small unmanned aircraft systems provides more immediate and thorough information than is presently available by other means. Expense for scaffolding, rental of manned aircraft, rental of equipment, and lost time is saved. Safety is improved by reducing fall risk for workers and reducing potential for manned aircraft accidents.

- As described in "2. Procedures for Ensuring UAS Is in a Condition Safe for Flight", altitude and distance limits will be entered into the Pantom 2 Assistant software prior to commencement of flight. This will restrict the operation to LandBros Client property. The Failsafe Function integral with the Phantom 2 will assure this aircraft stays within the area deemed safe for operation.
- Industrial facilities of the type mentioned above have strict safety procedures which must be satisfied. LandBros' respect for compliance with these procedures is vital to assuring positive Client relationships and continuing business. All safety procedures for personnel will be strictly adhered to as well as all laws and regulations.

6. Proposed Speed, Altitude, Visibility and Distances

Speed:

The Phantom 2 is capable of a maximum speed of 15m/s (29.2 knots). In order to conserve power, and thereby maximize flight time, and to assure good quality still photographs and video, the Phantom 2 will be operated at a slow speed along the flight path, typically 2m/s (3.9 knots) or below. Higher speeds may be used from time to time when traversing a section of the property of no interest and not included in a given study.

Altitude:

Altitudes below 400 ft. AGL are adequate for the complete range of facilities and structures to be surveyed. The integral Flight Control System will be set to limit the altitude to always be below that level.

Distance:

The integral Flight Control System will be set to limit the radial distance from the Home Point (point of flight commencement) such that the Phantom 2 will stay within the boundary of the property lines. The PIC will operate the equipment to assure those limits are not reached and will maneuver the Phantom 2 to follow the preplanned flight path within the property boundaries.

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

Operations will be aborted immediately if the PIC encounters unpredicted obstacles or emergencies. Safe descent and landing procedures will be followed in accordance with operating documents.

7. Description of the Area of Intended Operations

As described in "5. Description of Intended UAS Operations", the Phantom 2 operation will be restricted to LandBros Client property and not taken into public areas. LandBros and Client personnel on the site will be made fully aware of the operation prior to commencement of operations.

8. Proximity of Airports

Operations will be restricted to Class G airspace.
No operations will occur within 5 miles of a non-towered airport reference point as denoted on a current FAA-published aeronautical chart, unless a letter agreement with the airport's management is obtained, and the operation is conducted in accordance with a Notice to Airman (NOTAM) as required by the Certificate of Waiver or Operation (COA).

9. Operation within Visual Line-of-Sight (VLOS)

In addition to the PIC, all operations will include a Visual Observer (VO). The VO will assure that the Phantom 2 is always within their visual line-of-sight (VLOS), as well as the PIC's, at all times. The VO and the PIC will be able to communicate verbally at all times utilizing two-way radios available at LandBros Client sites.

10. Procedures for Preflight Safety Assessment

Prior to each flight, the PIC will inspect the Phantom 2, including the ground control station, in accordance with the Preflight Checklist (see "2. Procedures for Ensuring UAS Is In a Condition Safe for Flight"). If the Preflight Check indicates any unsafe conditions or a non-functioning safety-critical part, the flight will not commence until the needed maintenance is performed and a satisfactory Preflight Check can be completed. All maintenance and alterations performed will be documented and filed in the Equipment Inspection and Maintenance Record Book.

11. Notifications

As required, a Notice to Airmen (NOTAM) will be requested not more than 72 hours in advance and not less than 48 hours prior to an operation.
In addition, any notifications required by the FAA Flight Standards District Office will be made.

12. Certificate of Waiver or Authorization (COA)

Prior to conducting any operations, an Air Traffic Organization (ATO) issued Certificate of Waiver or Operation (COA) will be obtained for each aircraft. Services will start with one aircraft, with additional units added as needs for operations increase over time. Each Phantom 2 aircraft will be identified with its 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.

Specific Regulations for Which Exemption is Sought:

1. **14 CFR 21, Subpart H –Airworthiness Certificates**

   14 CFR 21 covers the certification procedures for products and parts. Subpart H specifies requirements for Airworthiness Certificates for various aircraft types. Small unmanned aircraft systems are not specifically called out and addressed in these rules.
   LandBros will, in lieu of airworthiness certification by aforementioned rule, if exemption is granted, ensure that the Phantom 2 system is in compliance with its operating documents as described herein. The PIC will assure that all Preflight Checks are completed and documented and the Phantom 2 is in full compliance with all manufacturers' operation and maintenance documents.
   Due to consideration of the size, weight, speed, and limited operating area associated with LandBros's proposed Phantom 2, we believe it will not create a hazard to users of the National Airspace System (NAS) or the public. Therefore, a request is made for exemption from 14 CFR part 21, and any associated noise certification and testing requirements of part 36.

2. **14 CFR 61.113(a) and (b), Certification: Pilots, Flight Instructors, and Ground Instructors**

   14 CFR 61.113 (a) and (b) prohibit private pilots from fulfilling the role of PIC if the aircraft is carrying property for compensation, unless the flight is only incidental to that business or employment.
   LandBros believes that due to the size, weight, speed, and limited operating area associated with LandBros' proposed Phantom 2 operation, a PIC possessing the aforementioned training and logged hours, would ensure safety and prevent creating any hazard to users of the National Airspace System (NAS) or the public. We therefore request an exemption from these parts of 14 CFR.

3. **14 CFR 91.7 (a), Airworthiness required for operation**

   If the exemption from 14 CFR 21, Subpart H (item 1 above) is granted, no airworthiness certificate will be required. On this basis, exemption from 14 CFR 91.7 (a) is requested, presuming that airworthy condition by definition in the rule means having an airworthiness certificate. LandBros will, in lieu of airworthiness certification by 14 CFR 21, ensure that the Phantom 2 system is in compliance with its operating documents as described herein. The PIC will assure that all Preflight Checks are completed and documented and execute full compliance with all manufacturer's operation and maintenance documents.

4. **14 CFR 91.103 (b) (2), Preflight action**

   14 CFR 91.103 (b) (2) specifies that the PIC be familiar with aircraft performance under expected values of airport elevation and runway slope, aircraft gross weight, and wind and temperature.

Since the Phantom 2 will not be operating out of airports this rule is not applicable. On this basis and on the basis that the operating documents cover requirements for operation safety, an exemption from this rule is requested.

5. 14 CFR 91.105, Flight crewmembers at stations

This part requires certain actions by onboard crewmembers. Since the Phantom 2 is unmanned, an exemption from this rule is requested.

6. 14 CFR 91.109, Flight instruction

14 CFR 91.109 describes requirements for flight instruction and requires that the aircraft used for flight instruction have fully functioning dual controls. The details pertain to manned airplanes and are not applicable to a small unmanned aircraft system such as the Phantom 2. Flight training will be required for the Phantom 2 pilot as detailed on page 5 herein, "4. Qualifications for the Pilot in Command (PIC)." Compliance with these training requirements with logged hours assures that the required competency for safely operating the Phantom 2 will be maintained. On this basis an exemption from this rule is requested.

7. 14 CFR 91.119 (c), Minimum safe altitudes

14 CFR 91.119 (c) requires that no operation is permitted below 500 feet above the surface, except over open water and sparsely populated areas. The proposed use of the Phantom 2 is specifically for altitudes that range from the surface to maximum 400 feet AGL. On the basis of the aforementioned safety procedures, we believe there will be no increased hazard to users of the National Airspace System (NAS) or the public will be created by the Phantom 2 as detailed here.

8. 14 CFR 91.121, Altimeter settings

14 CFR 91.121 provides specific rules for altimeter settings for cruising altitude and flight level of aircraft and speaks of altimeter stations along the route and the elevation of the departure airport. In lieu of these specific requirements, most suitable for manned airplanes, the Phantom 2 has barometric altimeter and GPS derived altitude limitations. All altitudes reported to Air Traffic Control (ATC) will be in feet above ground level (AGL). On this basis, an exemption from this rule is requested.

9. 14 CFR 91.151, Fuel requirements for flights in VFR conditions

14 CFR 91.151(a) requires that no person may begin a flight under Visual Flight Rule (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 Phantom 2 has a built-in Low Battery Level Warning Function:

1) If the smart battery is depleted to the point that may affect the safe return of the aircraft, the low battery level warning notifies the PIC to take action.

2) The thresholds for these warnings are automatically determined based on the current aircraft altitude and its distance from the Home Point.

3) A color coded battery level indicator shows battery level, and an estimated remaining flight time in minutes is displayed.

4) When the critical battery level warning activates, the aircraft will gradually descend and land automatically.

As standard operating procedure, the PIC will immediately return the Phantom 2 to the Home Point for a battery swap when the battery level reaches 25%.
On the basis of these specific safety features of battery power level monitoring, and operating procedures, an exemption from this rule is requested.

10. 14 CFR 91.405 (a), Maintenance required

Please see exemption request explanation in item 15 below (14 CFR 91.417).

11. 14 CFR 91.407 (a) (1), Operation after maintenance

Please see exemption request explanation in item 15 below (14 CFR 91.417).

12. 14 CFR 91.409 (a) (2), Inspections

Please see exemption request explanation in item 15 below (14 CFR 91.417).

13. 14 CFR 91.417 (a) and (b), Maintenance records

Parts 91.405 (a), 91.407 (a) (1), 91.409 (a) (2), and 91.417 (a) and (b), contain requirements for maintenance of larger aircraft. In lieu of adapting these rules for the Phantom, LandBros Aerial Photography, L.L.C. is requesting an exemption on the basis that it will inspect the Phantom 2 and ensures that it is in a condition for safe flight prior to beginning any operation. We propose that adherence to the operating documents describing the requirements for maintenance, inspection, and recordkeeping, are sufficient to ensure that safety is not adversely affected.
PUBLIC BENEFIT
Granting this Section 333 Exemption would benefit the public in the following ways:

- Public Safety: Common practice for industrial facility construction projects and periodic site-wide industrial facility visual assessment involves utilization of manned aircraft. The potential risk to life and property is order of magnitudes less for use of a small

unmanned aircraft system as compared to conventional aerial photography by manned fixed wing aircraft.

- Industrial Safety: In order to accomplish inspections of difficult to access areas at high elevations requires either erection of scaffolding or lifting personnel by crane in protective enclosures to view the subject of interest. Fall protection gear and compliance with OSHA rules governing such work is crucial for life safety. The ultimate protection, however, would be to not involve personnel in such activity and instead complete this work with an unmanned aircraft system.

- Energy Savings and Environmental Protection: Reduction of frequency of manned aircraft used to do aerial photography and surveys for construction sites and industrial facilities results in burning less fuel thereby saving energy and reducing emissions of combustion gases.

REASONS SAFETY NOT ADVERSELY AFFECTED AND IS AT LEAST EQUIVALENT TO EXISTING RULE
The key features of the proposed Phantom 2 unmanned aircraft system that assure that safety to the public and safety of the National Airspace System (NAS) is not adversely affected are the following:

- Credentials and training for the Pilot in Command (PIC), along with detailed operating procedures, assure that the level of competency required for successful and safe flight operations is achieved.

- The built-in Flight Control System, which includes a Failsafe Function, assures immediate return to the Home Point and safe landing under failure scenarios, thereby preventing injury or damage.

- Visual Line-of-Sight (VLOS) operation provided by the PIC and the Visual Observer (VO), and their ability to communicate verbally at all times, assures full operational control.

- Detailed operations and maintenance procedures, including a Preflight Checklist, provide assurance of mechanical integrity and full functioning of Phantom 2 unmanned aircraft system prior to commencement of any operation.

SUMMARY FOR PUBLICATION IN FEDERAL REGISTER
Petition for Exemption

Docket No.: FAA-2015-xxxx

Petitioner: LandBros Aerial Photography, L.L.C.

Section of 14 CFR 14 CFR 21 Subpart H, 61.113(a) and (b), 91.7 (a), 91.103 (b) (2), 91.105, 91.109, 91.119 (c), 91.121, 91.151, 91.405 (a), 91.407 (a) (1), 91.409 (a) (2), 91.417 (a) and (b).

Description of Relief Sought: The petitioner is seeking an exemption to utilize an unmanned aircraft system (UAS) to accomplish aerial photography, surveys and assessments of industrial and commercial facilities.

Respectfully Submitted,

Daniel P. Landry
Owner
LandBros Aerial Photography, L.L.C.