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

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

August 11, 2015

Exemption No. 12442
Regulatory Docket No. FAA–2015-1463

Mr. Bradley Pierce
27 West Sutton Road
Sutton, MA 01590

Dear Mr. Pierce:

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

By letter dated April 25, 2015, you petitioned the Federal Aviation Administration (FAA) for an exemption. The petitioner requested to operate an unmanned aircraft system (UAS) to conduct aerial photography, videography, inspections, training, and closed set filming.

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 3 Professional and 3D Robotics Solo.

The petitioner requested relief from 14 CFR part 21, *Certification procedures for products and parts, Subpart H—Airworthiness Certificates*. In accordance with the statutory criteria provided in Section 333 of Public Law 112−95 in reference to 49 U.S.C. § 44704, and in consideration of the size, weight, speed, and limited operating area associated with the aircraft and its operation, the Secretary of Transportation has determined that this aircraft

meets the conditions of Section 333. Therefore, the FAA finds that the requested relief from 14 CFR part 21, *Certification procedures for products and parts, Subpart H—Airworthiness Certificates*, and any associated noise certification and testing requirements of part 36, is not necessary.

The Basis for Our Decision

You have requested to use a UAS for aerial data collection[1] and closed set motion picture and filming. 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, Bradley Pierce 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 and closed set motion picture and filming. This exemption is subject to the conditions and limitations listed below.

[1] Aerial data collection includes any remote sensing and measuring by an instrument(s) aboard the UA. Examples include imagery (photography, video, infrared, etc.), electronic measurement (precision surveying, RF analysis, etc.), chemical measurement (particulate measurement, etc.), or any other gathering of data by instruments aboard the UA.

Conditions and Limitations

In this grant of exemption, Bradley Pierce 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 3 Professional and 3D Robotics Solo 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 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 August 31, 2017, unless sooner superseded or rescinded.

Sincerely,

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

Enclosures

UAS Exemption for Bradley Pierce 2015

April 25, 2015

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

Bradley Pierce
27 West Sutton Rd
Sutton, MA 01590

Re: Exemption Request Pursuant to Public Law 112-95, Section 333 of the FAA Reform Act and Part 11 of the Code of Federal Regulations from: 14 CFR 21 subpart H; 14 CFR 47.3(b)(2); 14 CFR 47.31(c); 14 CFR 91.9(b)(2); 14 CFR 91.109(a); 14 CFR 91.119(d)(1); 14 CFR 91.121; 14 CFR 91.131(b)(1); 14 CFR 91.131(d)(1)&(2); 14 CFR 91.203(a)&(b); 14 C.F.R. 91.403(b)&(c); 14 CFR 91.405; 14 CFR 91.407; 14 CFR 91.409 and 14 CFR 91.417.
Note: 14 CFR Part 61 in its current form applies to manned aircraft. 14 CFR 61.3 refers specifically to flight crew members who is defined in Part 1.1 as a pilot, flight engineer, or flight navigator assigned to duty "in an aircraft" during flight time; therefore no exemptions from Part 61 is being sought for as it is not applicable at the time of this exemption request.

Pursuant to Section 333 of the FAA Modernization and Reform Act of 2012 (the "Reform Act") and 14 CFR Part 11, Bradley Pierce, operator of a small Unmanned Aircraft System (UAS), hereby applies for an exemption from the listed Federal Aviation Regulations ("FARs") to allow commercial operation of its UAS, so long as such operations are conducted within and under the conditions outlined herein or as may be established by the FAA as required by Section 333.

The exemption would permit Bradley Pierce to operate a small Unmanned Aircraft System (UAS) for the commercial purposes stated in *Docket No.: FAA-2015-0150; Notice No.15-01,* including aerial video and photography over certain areas of the United States. Briefly described:

1. Aerial photography and/or video for public and/or private use including real estate, architecture, land surveying, engineering and other related professional activities.
2. Aerial video and/or photography for public and/or private use including television, public events, cinematography and news gathering.
3. Aerial inspection/photography of residential/commercial structures under contract with the owners or local government authority.
4. Aerial inspection/photography of residential/commercial utility infrastructure including but not limited to electrical power lines, wind turbines and cell towers.
5. Aerial video/photography or providing live video feed to assist with search and rescue operations in cases of an emergency or natural disaster only when the local authorities or government has requested it by contract and/or donation.
6. The ability to offer training to persons individually or belonging to both private and/or public organizations that have interests in the use and application of a UAS for the purpose of the safe operation of a UAS to enhance the safety of the National Airspace System (NAS) as well as for the protection of the persons and property.

As described fully below, the requested exemption would permit the operation of a UAS under controlled conditions in the NAS that would be a) limited b) controlled c) predetermined and d) will provide safety enhancements to the already safe operations in the industry presently using conventional aircraft. Approval of this exemption would thereby enhance safety and fulfill the Secretary of Transportation's and the FAA Administrator's responsibilities to "....establish requirements for the safe operation of such aircraft systems in the national airspace system.

The name, address and contact information of the Petitioner is:

Bradley Pierce
27 West Sutton Rd
Sutton, MA 01590
Cell Phone: 508 335 3871
brp@starfleetaudio.com

Regulations from which the exemption is requested:

14 CFR Part 21 subpart H
14 CFR 47.3(b)(2)
14 CFR 47.31(c)
14 CFR 91.9(b)(2)
14 CFR 91.109(a)
14 CFR 91.119(d)(1)
14 CFR 91.121
14 CFR 91.131(b)(1)
14 CFR 91.131(d)(1)&(2)
14 CFR 91.203(a)&(b)
14 C.F.R. 91.403(b)&(c)
14 CFR 91.405
14 CFR 91.407
14 CFR 91.409
14 CFR 91.417

Description and specifications of UAS to be used by the Petitioner

DJI Phantom 3 Professional

Weight (including battery and propellers) 2.8 pounds
Diagonal size (including propellers) 23.3 inches
Max Speed 35.8 mph (no wind)
GPS Mode GPS/GLONASS
Aircraft means of propulsion = Electric via Lithium Polymer Batteries
Battery Capacity 4480 mAh
Voltage 14.8 Volts
Max Flight Time Approximately 23 minutes

3D Robotics Solo

Weight (including battery and propellers) 3.8 pounds
Diagonal size (including propellers) 16.1 inches
Max Speed 55 mph (no wind)
GPS Mode GPS/GLONASS
Aircraft means of propulsion = Electric via Lithium Polymer Batteries
Battery Capacity 5200 mAh
Voltage 14.8 Volts
Max Flight Time Approximately 20 minutes

The Petitioner will operate the UAS in line of sight within a predetermined area owned and/operated by the property representative. Given the small size of the UAS and the controlled environment provided, the proposed operations will adhere to the Reform Act's safety requirements. The approval of this application presents no national security issues. Regarding the level of safety surrounding the proposed operations and the public benefit, reduction in environmental impacts, including but not limited to reduced emissions and noise, the grant of the requested exemption is in the public interest. Accordingly the Petitioner requests that the FAA grant the requested exemption with minimum delay.

AIRCRAFT AND EQUIVALENT LEVEL OF SAFETY

The operation limitations proposed for an equivalent or higher level of safety because operations will further enhance the safety of persons, property and also manned aircraft in the NAS. These limitations and conditions to which the Petitioner, hereafter referred to as the operator, agrees to adhere to when conducting commercial operations under the FAA issued exemption limitations, and as set forth in the Flight Operations Manual (FOM) include:

1. The small UAS, as specifically designated and described in this petition, will weigh less than 55 lbs including payload.
2. The UA will be operated within visual line of sight (VLOS) at all times by the operator or visual observers. (VO).
3. The UA will remain close enough to the operator so that human vision unaided by any device other than corrective lenses will be used.
4. The UA will not be operated over persons not directly involved in the operation unless those persons remain under a covered structure.
5. The UA will only be operated during daylight (official sunrise to official sunset of local operation area) unless specific authorization from the FAA is granted prior to operations.
6. The operator may use VOs for certain operations and will ensure each VO is trained on procedures listed in the operator's FOM.
7. The UA will not be operated at a speed exceeding 87 knots (100 miles per hour) using ground speed 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.
8. The UA will be operated at an altitude of no more than 500 feet above ground level (AGL). Altitude will be measured in feet AGL. If an object to be inspected, such as an antenna, exceeds 500 feet AGL, the operator will limit the flight to within 200 feet higher than the structure being photographed. The operator will notify the FAA and local authorities of the proposed plan to include date, time, location and height of the object to be inspected prior to operations. The UA will be flown in safe manner in close proximity to the object as to not interfere with traffic in the NAS.
9. The UA will not be operated unless visibility is greater than day requirements listed in 14 CFR 91.155 for the Class of airspace at the operator's ground station, on location.
10. The UA will not be operated in Class A airspace (18,000 feet and above).
11. The operator will receive ATC permission prior to operations in Class B, C, D and E airspace.
12. The operator will ensure that any VOs, if used, will only monitor one UA at any given time.
13. The operator will not allow operations from a moving vehicle or aircraft, except for watercraft on the water.
14. The operator will not conduct any careless or reckless operations. A flight will be terminated immediately as possible if the safety of the operation cannot be maintained.
15. Prior to each flight, the operator will 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, logged and the UAS is found to be in a condition for safe flight.
16. The operator will not operate any UA if a physical or mental condition would prevent the safe operation of that aircraft.
17. When using a VO or VOs, the operator and VO must be able to communicate at all times. Radio communications or communication-assisting devices may be used. Electronic messaging or texting will not be permitted during flight operations. Daisy-chaining of VOs for the purpose of expanding the operations area will not be permitted.
18. The operator will be responsible to see and avoid all other users of the NAS in which the UAS is operating.

19. The holder of this exemption will be responsible to ensure its aircraft are properly 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.
20. The UAS operator will be designated before the flight and cannot transfer his or her designation for the duration of the flight unless a medical duress or unforeseen emergency is preventing safe operation of the UAS. In which case the VO, who has been deemed qualified and trained in the operation of the UAS, will operate the controls to land the UA in a predetermined "emergency plan" set forth by the operator who was granted this exemption. The holder of this exemption must ensure that VOs, if used, can perform the duties required of a VO.
21. Documents for UAS operations and maintenance will be made available to the FAA upon request. If a discrepancy exists between the conditions and limitations in this exemption and the procedures outlined in the FOM, the conditions and limitations herein take precedence and must be followed. Otherwise, the operator must follow the procedures as outlined in the FOM. The operator may update or revise its operating documents. It is the operator's responsibility to track such revisions and present revised documents to the FAA or any law enforcement official upon request. If the operator determines that any update or revision would affect the basis upon which the FAA granted an 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.
22. Any UAS that has undergone maintenance or alterations that affect UAS operations or flight characteristics, e.g. replacement of a flight critical component, must undergo an operational check flight prior to conducting further operations under this exemption. Operational check flights may only be conducted by a qualified operator familiar with the specific UAS being checked and must remain 500 feet from any persons unless they remain under a covered structure. (NPRM wording) The operational check flight must be conducted in such a manner so as to not pose an undue hazard to persons and property.
23. The operator is responsible for maintaining and inspecting the UAS to ensure that it is in a condition for safe operation.
24. The operator must follow the UAS manufacturer's maintenance; overhaul, replacement, inspection, and life limit requirements for the aircraft and aircraft components.
25. The holder of this exemption will follow manufacturer's safety bulletins for each UAS operated under this exemption.
26. The holder of this exemption will ensure that each operator is 17 years or older, a US citizen and has a state issued driver's license.
27. The holder of this exemption will require that its operators demonstrate the ability to safely operate the UAS in a manner consistent with how the UAS will be operated in this petition, including evasive and emergency maneuvers and maintaining appropriate distances from persons, vessels, vehicles and structures. Qualification flight hours and currency may be logged in a manner consistent with 14 CFR 61.51(b). Flights for the purposes of training the operator's and VOs (training, proficiency, and experience-building) and determining the ability to safely operate the UAS in a manner consistent with how the UAS will be operated, will be permitted. However, training operations may only be conducted during dedicated training sessions. During training, proficiency, and experience-building flights will be conducted 500 feet from any persons that are not intended to be part of such training operations unless those persons remain under a covered structure.
28. The operator will use UAS that have safety features allowing it to return to a preset location if it loses communications with its ground station. The operator will set this pre-determined location within the private or controlled-access property as to minimize any possible contact with objects.
29. The operator is prohibited from beginning a flight (considering wind and forecast weather conditions) unless there is enough available power for the UA to conduct the intended operation and to operate after that with at least 25% energy reserves or with the reserve power recommended by the manufacturer, whichever is greater. The operator will perform training tests, in a designated training area as prescribed herein, to assess the true energy characteristics of the specific UAS battery system to determine the actual flight time for reserve battery

power. Said energy tests will deem the "safety" operating procedure for actual emergencies and useful flight time.

30. The exemption holder will ensure that operators and VOs have a copy of this exemption, the FOM and applicable aircraft registrations located at the ground station during operations. These documents will be made available to the Administrator or any law enforcement official upon request.
31. All operations shall be conducted over private or controlled-access property with permission from the property owner/controller or authorized representative.
32. The exemption holder will be responsible to report to the FAA any small UAS operation that results in: (1) any injury to a person; or (2) damage to property other than the small unmanned aircraft. The report would have to be made within 10 days of the operation that resulted in injury or damage to property. Accidents will be reported to the National Transportation Safety Board (NTSB) per instructions contained on the NTSB Web site: www.ntsb.gov. Current NTSB accident reporting is required when 1) Any person suffers death or serious injury. 2) Any UAS with max gross takeoff weight exceeding 300 pounds sustains substantial damage.

Operations for closed-set motion picture and television filming and production include the following limitations:

33. The operator must have a motion picture and television operations manual (MPTOM) in his/her possession.
34. At least 3 days before aerial filming, the operator of the UAS 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;
    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. 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;
    f. Signature of operator or representative; and
    g. 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.
35. Flight operations may be conducted over/near participating persons consenting to be involved and necessary for the filming production, as specified in the operator's MPTOM.

Regulations from which the exemption is requested:

14 CFR Part 21, Subpart H and 14 CFR §91.203(a)(1)&(b): Airworthiness Certificates

Subpart H, entitled Airworthiness Certificates, establishes the procedural requirements for the issuance of airworthiness certificates as required by 14 CFR 91.203(a)(1). Given the size and limited operating area associated with the aircraft to be utilized by the Petitioner, an exemption from Part 21 Subpart H meets the requirements of an equivalent level of safety under Part 11 and Section 333 of the Reform Act. The Federal Aviation Act (49 U.S.C.§44701 (f)) and Section 333 of the Reform Act both authorize the FAA to exempt aircraft from the requirement for an airworthiness certificate, upon consideration of the size, weight, speed, operational capability, and proximity to airports and populated areas of the particular UAS. In all cases, an analysis of these criteria demonstrates that the UAS operated without an airworthiness certificate, in the restricted environment and under the conditions proposed will be at least as safe, or safer, than a conventional aircraft (fixed wing or rotorcraft) operating with an airworthiness certificate without the restrictions and conditions proposed.

The UAS to be operated hereunder is less than 55 lbs. fully loaded, carries neither a pilot nor passenger, carries no explosive materials or flammable liquid fuels, and operates exclusively within a secured and designated area. Unlike other civil aircraft, operations under this exemption will be tightly controlled and monitored by both the operator and under the requirements and in compliance with local public safety requirements. These safety enhancements provide a greater degree of safety to the public and property owners than conventional operations conducted with airworthiness certificates issued under 14 C.F.R. Part 21, Subpart H. Lastly, application of these same criteria demonstrates that there is no credible threat to national security posed by the UAS, due to its size, speed of operation, location of operation, nearly silent operation, lack of explosive materials or flammable liquid fuels, and inability to carry a substantial external load.

14 CFR 47.3(b)(2) and 14 CFR 47.31(c) and 14 CFR 91.203(a)(2): Registration required

This regulation states in part: No person may operate an aircraft that is eligible for registration under 49 U.S.C. 44101-44104 unless the aircraft is carrying aboard the temporary authorization required by §47.31(c). Part 91.203(a)(2) reads similar. The Petitioner will be operating small UAS. Placing registration paperwork inside the UA will be impractical. An equivalent level of safety can be achieved by the Petitioner ensuring that all temporary or permanent registration paperwork for the UAS being operated is located on site at the ground station as stated in item 30 in this document.

14 CFR 91.9(b)(2): Civil Aircraft Flight Manual in the Aircraft

Section 91.9(b)(2) provides: No person may operate a U.S.-registered civil aircraft ... (2) For which an Airplane or Rotorcraft Flight Manual is not required by §21.5 of this chapter, unless there is available in the aircraft a current approved airplane or Rotorcraft Flight Manual, approved manual material, markings, and placards, or any combination thereof. The UAS, given its size and configuration has no ability or place to carry such a flight manual on the aircraft, not only because there is no pilot on board, but because there is no room or capacity to carry such an item on the aircraft. The equivalent level of safety will be maintained by keeping the UAS flight manual at the ground station where the UAS operator will have immediate access to it.

14 CFR 91.109(a): Flight Instruction

Section 91.109(a) 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. The Petitioner will be operating small UAS that do not have fully functional dual controls. Flight control is accomplished through the use of a control box transmitter that communicates with the aircraft via radio communications. The equivalent level of safety is provided by the fact that neither a pilot nor passengers will be carried in the aircraft and by the size and speed of the aircraft. Flight instruction is accomplished by handing the transmitter between the instructor and trainee or by the use of a buddy box system. Instruction will also be accomplished in accordance with item 27 in this document.

14 CFR 91.119(d)(1): Minimum Safe Altitudes

Section 91.119 establishes safe altitudes for operation of civil aircraft. Section 91.119(d)(1) allows helicopters to be operated at less than the minimums prescribed, provided the person operating the helicopter complies with any route or altitudes prescribed for helicopters by the FAA. As this exemption is for a UAS that is similar to a helicopter and the exemption requests authority to operate at altitudes up to 500 AGL, or not more than 200 above a structure from which filming is planned, an exemption may be needed to allow such operations. As set forth herein, the UAS will never operate at higher than 500 AGL with the exception that in circumstances where the UAS is used to survey or photograph a structure whose height exceeds 500 feet AGL, the UAS will not be operated more than 200 feet above the highest point on the structure in accordance with procedures outlined in item 8 of this document.

The equivalent level of safety will be achieved given the size, weight, speed of the UAS as well as the location where it is operated. No flight will be taken without the permission of the property owner or local officials. Because of the advance notice to the property owner and participants in the filming activity, all affected individuals will be aware of the planned flight operations. Compared to flight operations with aircraft or rotorcraft weighting far more than the maximum 55lbs. proposed herein and the lack of flammable fuel, noise and any risk associated with these operations is far less than those

presently presented with conventional aircraft operating at or below 500 AGL. In addition, the low-altitude operations of the UAS will ensure separation between these UAS operations and the operations of conventional aircraft that must comply with Section 91.119. The procedures outlined in this document prohibit flight over persons not involved in operations unless they remain under a covered structure.

14 CFR 91.121: Altimeter Settings

This regulation requires each person operating an aircraft to maintain cruising altitude by reference to an altimeter that is set "...to the elevation of the departure airport or an appropriate altimeter setting available before departure." As the small UAS does not have a barometric altimeter, but instead a GPS altitude read out, an exemption may be needed. An equivalent level of safety will be achieved by the operator, pursuant to the safety check list and live flight data monitoring, confirming the altitude of the launch site shown on the GPS altitude indicator before flight. Flights will be conducted 500 feet above that read out or within 200 feet above the highest point of the structure being filmed as outlined in item 8 of this document

14 CFR 91.131(b)(1): Pilot requirements for Class B airspace

This regulation states that no person may operate a civil aircraft within a Class B airspace unless that person is a private pilot, recreational pilot, sport pilot or is a student pilot that meets requirements of §61.94 or §61.95 of this chapter. An exemption from this regulation may be required. An equivalent level of safety will be achieved by operating the small UAS at altitudes listed in the limitation section of this document. The UA will not be landing or departing from airports in Class B airspace nor flying through Class B airspace. The UAS will be flown in a controlled environment within VLOS. The UAS operator will require ATC permission prior to conducting operations and will give right of way to any manned aircraft.

14 CFR 91.131(d)(1)&(2): Equipment requirements for Class B airspace

The regulation states that no person may operate an aircraft in Class B airspace unless it is equipped with a transponder and after January 1, 2020 an ADS-B out system. An exemption may be required. Due to the size, weight and payload capacity of the small UAS, installing these systems is not practical. An equivalent level of safety will be achieved by operating the small UAS at altitudes listed in the limitations section of this document. The UAS will not be landing or departing from airports in Class B airspace nor flying through Class B airspace. The UAS will be flown in a controlled environment within VLOS. The UAS operator will require ATC permission prior to conducting operations and will give right of way to any manned aircraft.

14 C.F.R. 91.403(b)&(c); 91.405; 91.407; 91.409; 91.417: Maintenance and Inspections.

These regulations require that an aircraft operator or owner "shall have that aircraft inspected as prescribed in subpart E of this part and shall between required inspections, have discrepancies repaired as prescribed in part 43 of this chapter...," and others shall inspect or maintain the aircraft in accordance with Part 43.

Part 43 only applies to aircraft with a US airworthiness certificate or foreign registered aircraft operating in common carriage under provisions of Part 121 or 135. These sections will not apply to the Petitioner who will be operating a small UAS. An equivalent level of safety will be achieved as the UAS will be maintained in accordance with the UAS manufacturer's instructions and limitations listed in the operator's FOM. The small UAS will carry a small payload and operate in a controlled area for a limited period of time. If mechanical issues arise the UAS can land immediately and will be operating from no higher than 500 feet AGL, without prior FAA authorization. The operator will ensure that the UAS is in working order prior to initiating flight, perform required and preventative maintenance, and keep a log of any maintenance performed. Moreover, the operator is the person most familiar with the aircraft and best suited to maintain the aircraft in an airworthy condition to provide the equivalent level of safety.

Additional Information

The Petitioner, Bradley Pierce has held his Private Pilot Certificate No. 3481381 since 1994. He has been flying RC models for 36 years. For the last 10 years he has been the elected "Safety Officer" at his local Academy of Model Aeronautics (AMA) RC chartered club. He has taught RC safety and flying to local enthusiasts using the safety guidelines set by the AMA. He has long term RC skills such as model building, repairing, maintaining and flying experience. He also holds a Bachelor of Music degree from Berklee College of Music, Boston, Ma.

Satisfaction of criteria provided in Section 333 of the Reform Act of 2012 provide more than adequate justification for the grant of the requested exemptions allowing the commercial operation of the Petitioner's UAS.

Respectfully,

Bradley R. Pierce