

Exemption No. 11153

UNITED STATES OF AMERICA  
DEPARTMENT OF TRANSPORTATION  
FEDERAL AVIATION ADMINISTRATION  
WASHINGTON, DC 20591

In the matter of the petition of

**BURNZ EYE VIEW, INC.**

for an exemption from part 21 and §§ 45.23(b), 61.113(a) and (b), 91.7(a), 91.9(b)(2), 91.103, 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

**Regulatory Docket No. FAA-2014-0519**

**GRANT OF EXEMPTION**

By letter dated July 24, 2014, Mr. Michael D. Curran, Esq., Curran & Curran Law, 90 N. Coast Highway 101, Suite 103, Encinitas, California 92024, Counsel for Burnz Eye View, Inc., petitioned the Federal Aviation Administration (FAA) on behalf of Burnz Eye View, Inc. (Burnz Eye View) for an exemption from part 21 and §§ 45.23(b), 61.113(a) and (b), 91.7(a), 91.9(b)(2), 91.103, 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 the Federal Regulations (14 CFR). The proposed exemption would allow Burnz Eye View to operate its unmanned aerial system (UAS) for aerial photography and inspection, including but not limited to operations: (1) over land, waterways, and oceans; (2) operation over and/or in nonrestricted National Parks, National Forests, and non-navigable airspace using nonintrusive recording devices; and (3) operation in otherwise unrestricted U.S. States and Territories. All proposed operations would be conducted under controlled conditions in airspace that is: (1) limited, (2) predetermined, and (3) access controlled.

**The petitioner requests relief from the following regulations:**

Part 21, Certification Procedures for Products and Parts, prescribes, in pertinent part, the procedural requirements for issuing and changing design approvals, production approvals, airworthiness certificates, and airworthiness approvals.

Section 45.23(b) prescribes, in pertinent part, that when marks include only the Roman capital letter “N” and the registration number is displayed on limited, restricted, or light-sport category aircraft or experimental or provisionally certificated aircraft, the operator must also display on that aircraft near each entrance to the cabin, cockpit, or pilot station, in letters not less than 2 inches nor more than 6 inches high, the words “limited,” “restricted,” “light-sport,” “experimental,” or “provisional,” as applicable.

Section 61.113(a) and (b) prescribes that—

- (a) No person who holds a private pilot certificate may act as a pilot in command (PIC) of an aircraft that is carrying passengers or property for compensation or hire; nor may that person, for compensation or hire, act as PIC of an aircraft.
- (b) A private pilot may, for compensation or hire, act as PIC of an aircraft in connection with any business or employment if—
  - (1) The flight is only incidental to that business or employment; and
  - (2) The aircraft does not carry passengers or property for compensation or hire.

Section 91.7(a) prescribes that no person may operate a civil aircraft unless it is in an airworthy condition.

Section 91.9(b)(2) prescribes, in pertinent part, that no person may operate a U.S.-registered civil aircraft 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.

Section 91.103 prescribes that each PIC shall, before beginning a flight, become familiar with all available information concerning that flight, to include—

- (a) For a flight under instrument flight rules (IFR) or a flight not in the vicinity of an airport, weather reports and forecasts, fuel requirements, alternatives available if

the planned flight cannot be completed, and any known traffic delays of which the PIC has been advised by air traffic control (ATC);

- (b) For any flight, runway lengths at airports of intended use, and the following takeoff and landing distance information:
  - (1) For civil aircraft for which an approved Airplane or Rotorcraft Flight Manual containing takeoff and landing distance data is required, the takeoff and landing distance data contained therein; and
  - (2) For civil aircraft other than those specified in paragraph (b)(1) of this section, other reliable information appropriate to the aircraft, relating to aircraft performance under expected values of airport elevation and runway slope, aircraft gross weight, and wind and temperature.

Section 91.109 prescribes, in pertinent part, 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.

Section 91.119 prescribes that, except when necessary for takeoff or landing, no person may operate an aircraft below the following altitudes:

- (a) Anywhere. An altitude allowing, if a power unit fails, an emergency landing without undue hazard to persons or property on the surface.
- (b) Over congested areas. Over any congested area of a city, town, or settlement, or over any open-air assembly of persons, an altitude of 1,000 feet above the highest obstacle within a horizontal radius of 2,000 feet of the aircraft.
- (c) Over other than congested areas. An altitude of 500 feet above the surface, except over open water or sparsely populated areas. In those cases, the aircraft may not be operated closer than 500 feet to any person, vessel, vehicle, or structure.
- (d) Helicopters, powered parachutes, and weight-shift-control aircraft. If the operation is conducted without hazard to persons or property on the surface—
  - (1) A helicopter may be operated at less than the minimums prescribed in paragraph (b) or paragraph (c) of this section, provided each person operating

the helicopter complies with any routes or altitudes specifically prescribed for helicopters by the FAA; and

- (2) A powered parachute or weight-shift-control aircraft may be operated at less than the minimums prescribed in paragraph (c) of this section.

Section 91.121 prescribes, in pertinent part, that each person operating an aircraft shall maintain the cruising altitude by reference to an altimeter that is set when operating below 18,000 feet mean sea level (MSL) to the elevation of the departure airport or an appropriate altimeter setting available before departure.

Section 91.151(a) prescribes that no person may begin a flight in an airplane under visual flight rules (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.

Section 91.203(a) prescribes, in pertinent part, that no person may operate a civil aircraft unless it has within it—

- (1) An appropriate and current airworthiness certificate; and
- (2) An effective U.S. registration certificate issued to its owner or, for operation within the United States, the second copy of the Aircraft Registration Application as provided for in § 47.31(c).

Section 91.203(b) prescribes, in pertinent part, that no person may operate a civil aircraft unless the airworthiness certificate or a special flight authorization issued under § 91.715 is displayed at the cabin or cockpit entrance so that it is legible to passengers or crew.

Section 91.405(a) prescribes, in pertinent part, that each owner of an aircraft shall have that aircraft inspected as prescribed in subpart E of this part and shall, between required inspections, except as provided in paragraph (c) of this section, have discrepancies repaired as prescribed in part 43, Maintenance, Preventive Maintenance, Rebuilding, and Alteration.

Section 91.407(a)(1) prescribes that no person may operate any aircraft that has undergone maintenance, preventive maintenance, rebuilding, or alteration unless it has been approved for return to service by a person authorized under § 43.7 of this chapter.

Section 91.409(a)(2) prescribes, in pertinent part, that no person may operate an aircraft unless, within the preceding 12 calendar months, it has had an inspection for the issuance of an airworthiness certificate in accordance with part 21.

Section 91.417(a) and (b) prescribe, in pertinent part, that—

- (a) Each registered owner or operator shall keep the following records for the periods specified in paragraph (b) of this section:
  - (1) Records of the maintenance, preventive maintenance, and alteration and records of the 100-hour, annual, progressive, and other required or approved inspections, as appropriate, for each aircraft (including the airframe) and each engine, propeller, rotor, and appliance of an aircraft. The records must include—
    - (i) A description (or reference to data acceptable to the Administrator) of the work performed; and
    - (ii) The date of completion of the work performed; and
    - (iii) The signature and certificate number of the person approving the aircraft for return to service.
  - (2) Records containing the following information:
    - (i) The total time in service of the airframe, each engine, each propeller, and each rotor.
    - (ii) The current status of life-limited parts of each airframe, engine, propeller, rotor, and appliance.
    - (iii) The time since last overhaul of all items installed on the aircraft that are required to be overhauled on a specified time basis.

- (iv) The current inspection status of the aircraft, including the time since the last inspection required by the inspection program under which the aircraft and its appliances are maintained.
- (v) The current status of applicable airworthiness directives (AD) and safety directives including, for each, the method of compliance, the AD or safety directive number and revision date. If the AD or safety directive involves recurring action, the time and date when the next action is required.
- (vi) Copies of the forms prescribed by § 43.9(d) for each major alteration to the airframe and currently installed engines, rotors, propellers, and appliances.

(b) The owner or operator shall retain the following records for the periods prescribed:

- (1) The records specified in paragraph (a)(1) of this section shall be retained until the work is repeated or superseded by other work or for 1 year after the work is performed.
- (2) The records specified in paragraph (a)(2) of this section shall be retained and transferred with the aircraft at the time the aircraft is sold.
- (3) A list of defects furnished to a registered owner or operator under § 43.11 of this chapter shall be retained until the defects are repaired and the aircraft is approved for return to service.

**The petitioner supports its request with the following information:**

The petition and the following supporting documentation are hereinafter referred to as the operating documents:

- 1) Openpilot Preflight Checklist
- 2) PHANTOM 2 User Manual V1.2

The FAA has organized the petitioner's information into four sections: (1) the unmanned aircraft system (UAS), (2) the UAS pilot in command (PIC), (3) the UAS operating parameters, and (4) the public interest.

### Unmanned Aircraft System

The petitioner states the proposed UAS is a DJI PHANTOM 2 multi-rotorcraft UAS with four motors and propellers in a quadcopter configuration weighing 3 pounds or less, including camera and payload. The UAS is also equipped with an onboard NAZA computer stabilization controller and Global Positioning System (GPS), the petitioner operates the UAS under normal conditions, at speeds of 5 to 30 knots, (Note: the petition states 5 to 50 knots, however the Phantom 2 User Manual indicates the maximum speed is 15 meters/second or 30 knots). The UAS has the capability to hover and move in the vertical and horizontal planes independently and simultaneously. The petitioner states that all flight operations will be conducted within visual line of sight (VLOS) of the pilot and/or observer and will not create a hazard to users of the National Airspace System (NAS) or the public. The petitioner adds that given the size and limited operating area associated with the UAS, an exemption from part 21, subpart H, Airworthiness Certificates, subject to certain conditions and limitations, is warranted and meets the requirements for an equivalent level of safety under 14 CFR part 11, *General Rulemaking Procedures*, and section 333 of Public Law 112–95. The petitioner further states its UAS will be operated without an airworthiness certificate under the conditions and limitations proposed and therefore will be at least as safe as, or safer than, a conventional aircraft (fixed-wing or rotorcraft) operating with an airworthiness certificate issued under part 21, subpart H.

The petitioner states its UA carries neither a pilot nor a passenger, carries no explosive materials or flammable liquid fuels, and operates exclusively within a limited flight area. The petitioner further describes that, in the event the UAS loses communications or its GPS signal, the unmanned aircraft (UA) will have the capability to return to a predetermined location within the security perimeter and land. The UA will also have the capability to abort a flight in the event of unpredicted obstacles or emergencies.

The petitioner states that even though its UAS will have no airworthiness certificate, an exemption may be needed from 14 CFR § 45.23 as the UA will have no entrance to the cabin, cockpit, or pilot station on which the word “experimental” can be placed. Given the size of the UA, the petitioner notes that the 2-inch lettering will be impossible. The petitioner asserts that an equivalent level of safety will be provided by having the UA marked with the word “experimental” on the fuselage in compliance with 14 CFR § 45.29(f), in a location where the pilot, observer, and others working with the UA will see the identification.

The petitioner states that the maintenance requirements in §§ 91.405(a), 91.407(a)(1), 91.409(a)(2), and 91.417(a) and (b) are only applicable to aircraft with an airworthiness certificate. The petitioner states its routine and preflight maintenance will be accomplished

by the operator, who will keep a log of any performed maintenance. The petitioner notes the operator is most familiar with the UA and best suited to maintain it in an airworthy condition to provide an equivalent level of safety. The petitioner adds that if a mechanical issue arises, the UA can land immediately, and given its small size, it poses minimal risk to persons or property.

#### UAS Pilot In Command (PIC)

The petitioner asserts that because the UAS will not carry a pilot or passengers on board, the proposed operations can achieve an equivalent level of safety by requiring the person operating the UA to have taken an FAA ground school course rather than to have obtained a commercial pilot certificate.

The petitioner explains the aircraft will be operated within controlled and restricted areas, and all flights will be planned and coordinated in advance such that a commercial pilot certificate is unwarranted. The petitioner asserts the risks associated with the operation of UAS are so diminished from the level of risk associated with commercial operations contemplated by 14 CFR part 61, *Certification: Pilots, Flight Instructors, and Ground Instructors*, when drafted, that allowing operations of the UAS with a private pilot as the operator, as requested, exceeds the current level of safety achieved by 14 CFR § 61.113(a) and (b).

#### UAS Operating Parameters

The petitioner states that all flights will be operated within VLOS of a pilot and/or observer to maintain safe separation from certificated aircraft in the airspace. In addition, the petitioner states UA flights will be limited to a maximum altitude of 500 feet above ground level (AGL) and restricted to class E and G airspace. The petitioner asserts an equivalent level of safety can be achieved given the size, weight, and speed of the UA, as well as the location where it is operated.

Regarding 14 CFR 91.7(a) the petitioner discusses that this regulation prohibits the operation of an aircraft without an airworthiness certificate. The petitioner then states that since no such certificate will be applicable in the form contemplated by FAA regulations, this regulation is inapplicable.

Regarding 14 CFR §§ 91.9(b)(2) and 91.203(a) and (b) the petitioner discusses that these regulations require an aircraft flight manual, and other documents (airworthiness certificate and registration) be carried in the aircraft. The petitioner then states that the UA carries no pilot and given the size of the UA, carriage of these documents aboard the UA is not

possible. The petitioner asserts that an equivalent level of safety will be achieved by maintaining these documents at the ground control point where the pilot flying the UA will have immediate access to them.

Regarding preflight actions, the petitioner requests an exemption from 14 CFR § 91.103, because it will not have approved rotorcraft flight manuals. The petitioner asserts an equivalent level of safety will be achieved by the operator taking all preflight actions including reviewing weather, flight battery requirements, landing and takeoff distances, and aircraft performance data before initiation of flight using appropriate checklists. Additionally, the petitioner states that a briefing will be conducted before each day's production activities and will be mandatory for all personnel who will serve as either the operator or visual observer/camera operator.

The petitioner requests an exemption from the requirement to have fully functional dual controls in aircraft used for flight instruction, prescribed by 14 CFR § 91.109. The petitioner asserts that remotely piloted aircraft, by their design do not have fully functional dual controls. Flight control is accomplished through the use of a radio transmitter that communicates with the aircraft via a receiver in the UA. The petitioner further asserts that the FAA has approved exemptions for flight training without fully functional dual controls for a number of aircraft. The petitioner states that 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.

The petitioner states that 14 CFR § 91.119 establishes safe altitudes for operation of civil aircraft. The petitioner then states that 14 CFR § 91.119 (d) allows helicopters to be operated at less than the minimums prescribed, provided the person operating the helicopter complies with any route or altitudes prescribed for helicopters by the FAA. The petitioner seeks relief to operate at altitudes up to 500 AGL, underneath navigable airspace and in class E and G airspace. The petitioner asserts that an equivalent level of safety will be achieved given the size, weight, speed of the UA 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, attempts will be made to contact all affected individuals regarding the planned flight operations. Compared to flight operations with aircraft or rotorcraft weighting far more than the UA proposed herein, and the lack of flammable fuel, any risk associated with these operations is far less than those presently presented with conventional aircraft. In addition, the low-altitude operations of the UA will ensure separation between these UA operations and the operations of conventional aircraft that must comply with § 91.119.

The petitioner notes that it may need an exemption from § 91.121, as its UAS has a GPS altitude readout instead of a barometric altimeter. The petitioner asserts an equivalent level of safety will be achieved via the operating documents requiring confirmation of the altitude of the launch site shown on the GPS altitude indicator before flight.

Regarding the fuel requirements, the petitioner notes that to meet the 30-minute reserve requirements in 14 CFR § 91.151, UAS flights would have to be limited to approximately 10 minutes. The petitioner argues that given the limitations on the UA's proposed flight area and the location of its proposed operations within a predetermined area, a longer timeframe for flight in daylight or night VFR conditions is reasonable. The petitioner believes an equivalent level of safety can be achieved by limiting flights to 60 minutes or not less than 10 percent of battery power, whichever occurs first.

### Public Interest

The petitioner states that, given the small size of the UA involved and the limited environment within which it will operate, its proposed operation "falls squarely within that zone of safety (an equivalent level of safety) in which Congress envisioned that the FAA must, by exemption, allow commercial operations of UAS to commence immediately." Also because of the size of the UA and the restricted areas in which the sUAS will operate, the petitioner asserts approval of the application presents no national security issue.

The petitioner further states that granting the requested exemptions is in the public interest because of (1) the clear direction in section 333 of Public Law 112-95, (2) the strong equivalent level of safety surrounding the proposed operations, and (3) the significant public benefit, including enhanced safety and reduction in environmental impacts (such as reduced emissions associated with allowing sUAS for photography and inspection operations).

### **Discussion of Public Comments:**

A summary of the petition was published in the Federal Register on August 22, 2014 (79 FR 49832). The FAA received three comments from associations regarding the notice of petition for exemption; one commenter supported the exemption request and two opposed it. The commenters discussed the following topics: UAS, PIC, operational capabilities, airspace, sense and avoid, and data link.

In support of Burnz Eye View's petition, the Small UAV Coalition (hereafter the Coalition) urges the FAA to adopt an evaluation framework for UAS operations under section 333 of Public Law 112-95 that weighs the relative safety issues and risks of UAS by class and

operational circumstances, rather than adopting artificial distinctions among unmanned aerial vehicles (UAV) based on commercial and noncommercial operations. The Coalition states that the FAA safety regulations should be proportionate to the risks posed by the particular proposed sUAS operations by distinguishing sUAS from other UAS. Therefore, the Coalition asserts that because sUAS operations like Burnz Eye View's pose minimal risk to safety, they should be subject to minimal and appropriate regulations.

The Coalition notes the FAA is to consider the seven factors in section 333 as a minimum. The Coalition states that Burnz Eye View's petition shows the FAA should consider factors other than those specified in section 333, such as location, airspace and altitude of its sUAS, and pilot training and experience. The Coalition maintains that Burnz Eye View's proposed operations satisfy the seven factors in section 333 and include several additional mitigating factors to ensure the safety and security of Burnz Eye View's proposed sUAS operations. Additional supporting comments from the Coalition cited the petitioner's intent operate over controlled sites. The Coalition notes that Burnz Eye View proposes to operate its sUAS below 500 feet AGL, in class E or G airspace, with notice to and with the consent of the property owners, and views these precautions as more than adequate to ensure safe operations by the petitioner. The discussion of the factors articulated in section 333 and the analysis of the Petitioner's proposed operations is found in the FAA Analysis section below.

The Coalition states Burnz Eye View's request for an exemption from airworthiness certification requirements is warranted because Burnz Eye View has proposed operational limitations that are more than adequate to receive a grant of exemption from an airworthiness certification regulation. The Coalition adds that similar sUAS operations conducted by hobbyists and modelers are permitted without such certification.

The Coalition states that pilot certification requirements for manned aircraft are unnecessary and inappropriate for operators of small, unmanned aircraft. However, the Coalition recognizes the petitioner's intent to use trained airmen specifically airmen who have completed an FAA ground school. The Coalition believes such a UAV/UAS-focused training regimen will achieve at least as equivalent a level of safety as obtaining a private or commercial pilot certificate because the training will be focused on the particular skills of operating a small UA and the particular nature of UAS operations.

Regarding the FAA administrative process to authorize UAV operations, the Coalition advocates that in evaluating petitions for exemption under section 333, the FAA should assess safety impact and public interest, rather than seek to establish an equivalent level of safety in comparison to regulations applicable to manned aircraft under 14 CFR part 11. In addition, the FAA should make general determinations regarding UAS operations, including blanket

modifications of requirements for carriage of flight manual, registration certificate, and airworthiness certificate onboard aircraft. The Coalition suggests these documents be maintained in the UAS operator's identified ground station.

The FAA is using its exemption process to authorize limited civil UAS operations. That process requires the FAA to review whether granting a request would be in the public interest and whether a grant would adversely affect safety or provide a level of safety at least equal to that provided by the rule from which exemption is sought. The FAA's finding regarding the location of flight manuals and other documents is discussed in the FAA Analysis section.

The Air Line Pilots Association International (ALPA) and the National Agricultural Aviation Association (NAAA) submitted comments opposed to a grant of exemption.

ALPA noted the proposed operations would occur below 500 feet above the surface in class E and G airspace during both day and night. ALPA states the petition references operations that are "limited, predetermined, and controlled as to access," but does not offer a means to control the airspace or areas of operations. ALPA further notes the aircraft "may not have a barometric altimeter" so the ability to accurately maintain altitude must be addressed. ALPA asserts that a means must be specified to control the airspace in which the operation takes place. ALPA states the airspace for the proposed operations is described only as "a confined sterile area" that may require establishing a "security perimeter." ALPA comments there must be means both to ensure the UA remains within the defined airspace and to ensure the hazard of other aircraft intruding on the operation is mitigated.

ALPA also commented that it opposes "the petitioner's attempt to avoid certifying the airworthiness of this sUAS" by requesting exemption from 14 CFR part 21 and § 91.203. It also stated its concern that sUAS do not have enough power to remain properly lit for the petitioner's proposed night operations. As discussed in greater detail below, Section 333 of the FAA Modernization and Reform Act of 2012 authorizes the Secretary of Transportation to determine, considering a number of factors laid out in statute, that an airworthiness certificate is not necessary for certain operations. The Secretary has made that determination in this case and therefore the aircraft operated by the petitioner will not need to be certificated by the FAA. The FAA notes that this exemption does not authorize nighttime operations.

ALPA expresses concern that the petitioner's proposed operations will be for "compensation or hire," and states that the pilot must hold at least a current FAA commercial pilot certificate with an appropriate category and class rating for the type of aircraft being flown and have specific and adequate training on the sUAS make and model intended to be used. Similarly, ALPA asserts a current second-class airman medical certificate should be required for a sUAS

pilot operating an aircraft for compensation or hire in commercial operations as is required in the NAS today.

NAAA provides similar comments and concerns, stating “holding a commercial certificate holds sUAS operators to similar high standards as commercial aircraft operators and ensures they are aware of their responsibilities as commercial operators within the NAS. Medical requirements ensure they have the necessary visual and mental acuity to operate a commercial aircraft repeatedly over a sustained period of time.” The FAA has reviewed the comments regarding knowledge, training, and medical certification required by holders of both private and commercial certificates. Additional details are found in the FAA’s analysis of 14 CFR part 61.

ALPA states concern that the petitioner did not specify requirements for flight instructors. As discussed below the FAA has found that the petitioner’s training program and the condition requiring that the pilot have the skills after completing the training program to operate safely under this exemption will provide an acceptable level of preparation.

ALPA maintains that command and control (C2) link failures are one of the most common failures on a sUAS, and that lost link mitigations should require safe modes to prevent fly-aways or other scenarios. Specifically it questions whether the sUAS could safely return to a safe landing area in the event of GPS loss. The petitioner’s operating materials indicates that the UAS has a failsafe mode in which it will descend automatically if the aircraft finds less than a certain number of satellites. The FAA finds that the UAS to be operated by the petitioner has sufficient design features to address C2 hazards. Further detail is contained in the analysis of the UAS below.

NAAA explains it represents the interests of small business owners and pilots licensed as commercial applicators. NAAA notes its members operate in low-level airspace, and clear low-level airspace is vital to the safety of these operators.

NAAA states that seeing and avoiding other aircraft and hazardous obstructions is the backbone of agricultural safety, and agricultural pilots depend on pilots of other aircraft to perform their see-and-avoid functions needed to prevent collisions. NAAA believes UA operations at low altitudes will increase the potential of collision hazards with agricultural aircraft. In its comments, ALPA also expresses concerns that Burnz Eye View needs to specify plans to address see-and-avoid.

NAAA believes it is vital that commercial aircraft, manned and unmanned, have received airworthiness certification by the FAA to ensure they can safely operate in the NAS without

posing a hazard to persons or property. NAAA believes sUAS should have equipage such as ADS-B Out, strobe lighting, and marking to ensure the aircraft is visible to manned aircraft, law enforcement, the public, and other aircraft.

NAAA proposes sUAS comply with 13 measures similar to those presented by the North Dakota Agricultural Aviation Association to the North Dakota Department of Commerce, which is the organization awarded the North Dakota UAS test site.

Concerns raised in this comment section not addressed above are addressed in the FAA's analysis. Where necessary appropriate risk mitigations are implemented through the conditions and limitations on the operations.

**The FAA's analysis is as follows:**

Unmanned Aircraft System

The petitioner requested relief from 14 CFR part 21, *Certification procedures for products and parts*. In accordance with the statutory criteria provided in Section 333 of P.L. 112-95 in reference to 49 USC § 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, and any associated noise certification and testing requirements of part 36, is not necessary.

Manned helicopters conducting aerial filming can weigh 6,000 lbs. or more and are operated by an onboard pilot, in addition to other onboard crewmembers, as necessary. The petitioner's UA will weigh less than 3 lbs. with no onboard pilot or crew. The pilot and crew will be remotely located from the aircraft. The limited weight significantly reduces the potential for harm to participating and nonparticipating individuals or property in the event of an incident or accident. The risk to an onboard pilot and crew during an incident or accident is eliminated with the use of a UA for the aerial filming operation.

Manned aircraft are at risk of fuel spillage and fire in the event of an incident or accident. The UA carries no fuel, and therefore the risk of fire following an incident or accident due to fuel spillage is eliminated. During aerial photography and inspection with manned aircraft under the conditions of an FAA issued Certificate of Waiver, aircraft can be operated in very close proximity to participating persons. The safety of these individuals is maintained through use of an aircraft with standard airworthiness certification under 14 CFR part 21, Subpart H, operation of the aircraft by a qualified and competent pilot, and operating according to

limitations necessary to ensure safety. Compared to manned aircraft, the UA being operated by the petitioner reduces the risk to persons and property in close proximity to the aircraft due to the limited size, weight, operating conditions, and design safety features of the UAS. This exemption does not require an electronic means to monitor and communicate with other aircraft, such as transponders or sense and avoid technology. Rather the FAA is mitigating the risk of these operations by placing limits on altitude, requiring stand-off distance from clouds, permitting daytime operations only, and requiring that the UA be operated within visual line of sight and yield right of way to all manned operations. Additionally, the exemption provides that the operator will request a NOTAM prior to operations to alert other users of the NAS.

The petitioner's UAS has the capability to operate safely after experiencing certain in-flight failures. The UA is also able to respond to a lost-link event with a pre-coordinated, predictable, automated flight maneuver. The FAA also believes that the multiple control redundancies described in the petitioner's operating documents are sufficient to mitigate risks associated with the loss of GPS signal. These additional safety features ensure that these operations will not adversely impact the safety of participating and nonparticipating individuals.

Regarding the petitioner's requested relief from 14 CFR § 45.23(b) *Display of marks*, the petitioner's request is made under the assumption that marking with the word "experimental" will be required as a condition of an exemption request. However, this marking is reserved for aircraft that are issued experimental certificates under 14 CFR § 21.191. Since the petitioner's UAS will not be certificated under 14 CFR § 21.191, a grant of exemption for 14 CFR § 45.23(b) is not necessary.

The petitioner requests relief from 14 CFR §§ 91.405 (a) *Maintenance required*, 91.407(a)(1) *Operation after maintenance, preventive maintenance, rebuilding, or alteration*, 91.409(a)(2) *Inspections*, and 91.417(a) and (b) *Maintenance records*. The FAA has evaluated the petitioner's request and determined that cause for exemption to these requirements is warranted. The FAA notes that the petitioner's operating documents contain preflight checks for the UAS. The FAA has also determined that relief from § 91.409(a)(1) is also necessary because it is an alternate inspection requirement of § 91.409(a)(2). The FAA finds that adherence to the operating documents, as required by the conditions and limitations below, is sufficient to ensure that safety is not adversely affected.

### Pilot In Command of the UAS

Regarding the petitioner's requested relief from 14 CFR 61.113(a) and (b), *Private pilot privileges and limitations*, the petitioner requested regulatory relief to operate his UAS without an FAA-certificated pilot. However, the FAA does not possess the authority to exempt the petitioner from the statutory requirement to hold an airman certificate, as prescribed in 49 USC § 44711.<sup>1</sup> Although Section 333 provides limited flexibility to the statutory requirement to hold an airworthiness certificate, it does not provide flexibility for other requirements of title 49. For further information see Exemption No. 11110, Trimble Navigation, Ltd.

The FAA is also requiring a pilot certificate for UAS operations. Pilots holding an FAA issued private or commercial pilot certificate are subject to the security screening by the Department of Homeland Security that certificated airmen undergo. As previously determined by the Secretary of Transportation, the requirement to have an airman certificate ameliorates security concerns over civil UAS operations conducted in accordance with Section 333.

Under current regulations, civil operations for compensation or hire require a PIC holding a commercial pilot certificate per 14 CFR part 61. Based on the private pilot limitations in accordance with pertinent parts of 14 CFR § 61.113(a) and (b), a pilot holding a private pilot certificate cannot act as a PIC of an aircraft for compensation or hire unless the flight is only incidental to a business or employment. However, in Grant of Exemption No. 11062 to Astraeus Aerial (Astraeus), the FAA determined that a PIC with a private pilot certificate operating the Astraeus UAS would not adversely affect operations in the NAS or present a hazard to persons or property on the ground.

The petitioner proposes to operate with a pilot who does not possess an FAA issued pilot certificate. This is similar to other petitions for exemption previously filed with and considered by the FAA. As in Exemption Nos. 11062 (Astraeus) and 11138 (Douglas Trudeau), the FAA has analyzed the petitioner's proposed operation and determined it does not differ significantly from these grants of exemption. The petitioner plans to operate in the NAS over controlled access property with the permission of the land owner/controller, while also limiting property access to consenting participants while operations are underway. Given: 1) the similar nature of the petitioner's proposed operating environment to that of Astraeus, 2) the parallel nature of private pilot aeronautical knowledge requirements to those

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<sup>1</sup> 49 USC § 44711 prohibits a person from serving "in any capacity as an airman with respect to a civil aircraft, aircraft engine, propeller, or appliance used, or intended for use, in air commerce...without an airman certificate authorizing the airman to serve in the capacity for which the certificate was issued . . . .".

of commercial requirements [ref: Exemption No. 11062], and 3) the airmanship skills necessary to operate the UAS, the FAA finds that the additional manned airmanship experience of a commercially certificated pilot would not correlate to the airmanship skills necessary for the petitioner's proposed operations. Therefore, the FAA finds that a PIC holding a private pilot certificate and a third-class airman medical certificate is appropriate for the proposed operations.

With regard to the airmanship skills necessary to operate the UAS the petitioner has proposed that its PICs shall have a minimum of 100 hours of flight time with the UAS proposed for its operations. The conditions and limitations below stipulate that the petitioner may not permit any PIC to operate unless that PIC has demonstrated during those 100 hours, that the PIC is able 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 people, vessels, vehicles and structures. The petitioner is responsible for assessing its operations and identifying any additional skills required to operate safely under normal and abnormal conditions. Normal condition skills may include the ability to maintain altitude, maintain VLOS, and navigational skills. Abnormal condition skills may include the ability to avoid obstacles, avoid air traffic, and respond to loss of link.

In conclusion, the FAA finds that a PIC holding a private pilot certificate and a third-class airman medical certificate, and who has completed the petitioner's flight time requirements, can conduct the proposed UAS operations without adversely affecting the safety of the NAS and persons or property on the ground. Upon consideration of the overall safety case presented by the petitioner and the concerns of the commenters, the FAA finds that granting the requested relief from 14 CFR § 61.113(a) and (b), is warranted.

The petitioner has also indicated it will supplement its proposed operation(s) with a visual observer (VO) who has completed the petitioner's training program. The conditions and limitations below stipulate that the PIC must ensure that the VO can perform the functions prescribed in the operating documents. Additionally, as discussed in Exemption No. 11109 to Clayco, Inc., there are no regulatory requirements for visual observer medical certificates. Although a medical certificate is not required for a VO, the UA must never be operated beyond the actual visual capabilities of the VO, and the VO and PIC must have the ability to maintain VLOS with the UA at all times. It is the responsibility of the PIC to be aware of the VO's visual limitations and limit operations of the UA to distances within the visual capabilities of both the PIC and VO. Moreover, the VO will not be operating the aircraft. Therefore, as in Grant of Exemption No. 11062 to Astraeus, the FAA does not consider a medical certificate necessary for the VO.

### Operating parameters of the UAS

The petitioner requested relief from 14 CFR § 91.7(a) *Civil aircraft airworthiness* and the FAA finds that relief from § 91.7(a) is necessary. While the petitioner's UAS will not require an airworthiness certificate in accordance with 14 CFR part 21, Subpart H, the FAA considers the petitioner's compliance with its operating documents to be a sufficient means for determining an airworthy condition. Therefore, relief from § 91.7(a) is granted. The petitioner is still required to ensure that its aircraft is in an airworthy condition – based on compliance with the operating documents prior to every flight, and as stated in the conditions and limitations below. Regarding the petitioner's requested relief from 14 CFR § 91.9 *Civil aircraft flight manual, marking, and placard requirements* and 14 CFR § 91.203(a) and (b) *Civil aircraft: Certifications required*, the FAA has previously determined in Grant of Exemption 11062, Astraeus Aerial, that relief from these sections is not necessary. Relevant materials may be kept in a location accessible to the PIC in compliance with the regulations.

Although the petitioner did not request relief from 14 CFR 91.7(b), in accordance with the regulation the PIC of the UAS is responsible for determining whether the aircraft is in a condition for safe flight. The FAA finds that the PIC can comply with this requirement.

Regarding the petitioner's requested relief from 14 CFR 91.103, *Preflight Action*, the petitioner requires each PIC to take certain actions before flight to ensure the safety of the flight. The exemption is needed because the pilot will take separate preflight actions as referenced in the operating documents. Although there will be no approved Airplane or Rotorcraft Flight Manual available, the FAA believes that the petitioner can comply with the other applicable requirements in 14 CFR § 91.103(b)(2). The procedures outlined in the operating documents address the FAA's concerns regarding compliance with § 91.103(b). The PIC will take all actions including reviewing weather, flight battery requirements, landings, and takeoff distances and aircraft performance data before initiation of flight. The FAA has imposed stricter requirements with regard to visibility and distance from clouds; this is to both keep the UA from departing the VLOS. The FAA also notes the risks associated with sun glare; the FAA believes that the PIC's and VO's ability to still see other air traffic, combined with the PIC's ability to initiate a return-to-home sequence, are sufficient mitigations in this respect. The PIC will also account for all relevant site-specific conditions in his or her preflight procedures. Therefore, the FAA finds that exemption from 14 CFR § 91.103 is not necessary.

Although the petition requests relief from 14 CFR § 91.109, *Flight instruction; Simulated instrument flight and certain flight tests*, it did not include supporting rationale or basis for such relief. However, as in Grant of Exemption Number 11138 (Douglas Trudeau), the FAA

has determined that relief is not necessary since the petitioner has not presented operations requiring a full-functioning dual set of controls.

The petitioner requested relief from 14 CFR § 91.119, *Minimum safe altitudes*. Relief from § 91.119(a), which requires operating at an altitude that allows a safe emergency landing if a power unit fails, is not granted. The FAA expects the petitioner to be able to perform an emergency landing without undue hazard to persons or property on the surface if a power unit fails.

Relief from § 91.119(b), operation over congested areas, is not granted, because, as discussed below, operations over congested areas will not be permitted under this exemption.

Relief from § 91.119(c) is necessary because the aircraft will be operated at altitudes less than 500 feet AGL. Section 91.119(c) states that no person may operate an aircraft below the following altitudes: *over other than congested areas*, an altitude of 500 feet above the surface, except over open water or sparsely populated areas. In those cases, the aircraft may not be operated closer than 500 feet to any person, vessel, vehicle, or structure.

Regarding stand-off distances from persons, vessels, vehicles and structures, 14 CFR § 91.119(c) requires that aircraft operate no closer than 500 feet to these persons or objects. As discussed in Exemption No. 11109 (Clayco, Inc.), operations conducted closer than 500 feet to the ground may require that the UA be operated closer than 500 feet to essential persons, or objects that would not be possible without additional relief. Therefore, the FAA is requiring that prior to conducting UAS operations, all persons not essential to flight operations (nonparticipating persons) must remain at appropriate distances. In open areas, this requires the UA to remain 500 feet from all persons other than essential flight personnel (i.e. PIC, VO, operator trainees or essential persons).

The FAA has also considered the UA's maximum gross weight of approximately 3 pounds. If barriers or structures are present that can sufficiently protect nonparticipating persons from the UA or debris in the event of an accident, then the UA may operate closer than 500 feet to persons afforded such protection. The operator must also 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. When considering how to immediately cease operations, the primary concern is the safety of those nonparticipating persons. In addition, the FAA finds that operations may be conducted closer than 500 feet to vessels, vehicles and structures when the owner/controller of any such vessels, vehicles or structures grants permission for the operation and the PIC makes a safety

assessment of the risk of operating closer to those objects and determines that it does not present an undue hazard.

Thus, the FAA finds that relief from § 91.119(c) is warranted provided adherence to the procedures in the operating documents and the FAA's additional conditions and limitations outlined below. Relief from § 91.119(a) is unwarranted as the FAA expects the petitioner to be able to perform an emergency landing without undue hazard to persons or property on the surface. Relief from § 91.119(b) is not granted and 91.119(d) is not applicable.

Regarding the petitioner's requested relief from 14 CFR § 91.121 *Altimeter Settings*, the UAS will not have a typical barometric altimeter onboard the aircraft rather it uses information generated from GPS to transmit altitude information to the PIC. As stated in the conditions and limitations below, the FAA requires any altitude reported to ATC to be in feet AGL. The petitioner may choose to set the GPS altitude indicator to zero feet AGL rather than local barometric pressure or field altitude before flight. Considering the limited altitude of the proposed operations, relief from 14 CFR § 91.121 is granted to the extent necessary to comply with the applicable conditions and limitations stated below.

Regarding the petitioner's requested relief from § 91.151(a) *Fuel requirements for flight in VFR conditions*, prior relief has been granted for manned aircraft to operate at less than prescribed minimums, including Exemption Nos. 2689, 5745, and 10650. In addition, similar UAS-specific relief has been granted in Exemption Nos. 8811, 10808, and 10673 for daytime, VFR conditions. The petitioner's only reference to this section is its commitment to land the UAS prior to 10% battery power remaining. However, this is below the manufacturer's recommendations contained in the operating documents. The operating documents indicate that two low-voltage (low battery) alerts are issued - warning that the first alert should be followed (30% - low battery level warning). Also, the UAS has an automated function which results in immediate landing when a low battery (15% battery level warning) is detected. These factors provide the FAA with sufficient reason to grant the relief from 14 CFR § 91.151(a) in accordance with the conditions and limitations below. The PIC would be prohibited from beginning a flight unless (considering wind and forecast weather conditions) there is enough power to fly to the intended landing point at normal cruising speed and land the UA with 30% battery power remaining.

With respect to the petitioner's request to operate at night, the FAA finds that the petitioner has not provided a sufficient safety case and mitigations, per FAA Order 8900.1 Volume 16, Chapter 5, Section 3 *General Operational Requirements*, to avoid collision hazards at night. All previous UAS-specific grants of relief from § 91.151(a) have restricted flights to daytime VFR conditions only. The petitioner has not provided sufficient data and analysis regarding

the PICs and VOs ability to maintain VLOS with the UA and conduct their functions to see and avoid other potential obstacles and air traffic at night. There is a condition and limitation below precluding nighttime UAS operations.

Additionally, in evaluating the petitioner’s proposed operating parameters, the petitioner references operations using first person view (FPV). Since the petitioner did not discuss how such operations can be conducted without adversely affecting safety, the conditions and limitations below preclude operations using FPV.

The petitioner proposed operations in class E and G airspace and at an altitude of up to 500 feet AGL. This exemption requires that the operator obtain a Certificate of Authorization or Waiver (COA) from the FAA. As part of that process the FAA Air Traffic Organization evaluates whether the operations could be conducted safely in the requested airspace.. The majority of current UAS operations occurring in the NAS are being coordinated through ATC by the issuance of a COA. This process not only makes local ATC facilities aware of UAS operations, but also provides ATC the ability to consider airspace issues that are unique to UAS operations. The COA will require the operator to request a NOTAM, which is the mechanism for alerting other users of the NAS to the UAS activities being conducted. The conditions and limitations below prescribe the requirement for the petitioner to obtain an ATO-issued COA.

Public Interest

The FAA finds that this grant of exemption is in the public interest. The enhanced safety achieved using a 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.

The table below summarizes the FAA’s determinations regarding regulatory relief:

<b><u>FAA determination (14 CFR)</u></b>	<b><u>FAA determination (14 CFR)</u></b>
Part 21	Relief not necessary
45.23(b)	Relief not necessary
61.113(a) and (b)	Relief granted with conditions and limitations
91.7(a)	Relief granted with conditions and limitations
91.9(b)(2)	Relief not necessary
91.103	Relief not necessary
91.109	Relief not necessary

<b><u>FAA determination (14 CFR)</u></b>	<b><u>FAA determination (14 CFR)</u></b>
91.119	Paragraphs (a) and (b) relief are not granted; paragraph (c) relief granted with conditions and limitations; paragraph (d) relief is not warranted
91.121	Relief granted with conditions and limitations
91.151(a)	Relief granted from 91.151(a)(1), day, with conditions and limitations
91.203(a) and (b)	Relief not necessary
91.405(a)	Relief granted with conditions and limitations
91.407(a)(1)	Relief granted with conditions and limitations
91.409(a)(1) and (2)	Relief Granted with conditions and limitations
91.417(a) and (b)	Relief granted with conditions and limitations

### **The FAA's 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, Burnz Eye View, Inc. is granted an exemption from 14 CFR § 61.113(a) and (b), 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 Burnz Eye View, Inc. to operate unmanned aircraft systems (UAS) for the purpose of aerial photography and inspection. This exemption is subject to the conditions and limitations listed below.

### **Conditions and Limitations**

Relative to this grant of exemption, Burnz Eye View is hereafter referred to as the operator. The petition and the following supporting documentation are hereinafter referred to as the operating documents:

- 1) Openpilot Preflight Checklist
- 2) PHANTOM 2 User Manual V1.2

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 following aircraft described in the operating documents, which is a quad-rotor aircraft weighing less

than 3 pounds: DJI PHANTOM 2 Unmanned Aircraft System. Proposed operations of any other aircraft will require a new petition or a petition to amend this grant.

2. UAS operations under this exemption are limited to conducting operations for the purpose of aerial photography and inspection.
3. The UA may not be flown at an indicated airspeed exceeding 30 knots.
4. The UA must be operated at an altitude of no more than 400 feet above ground level (AGL), as indicated by the procedures specified in the operating documents. All altitudes reported to ATC must be 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.
6. The use of first person view (FPV) by the PIC or VO is not permitted.
7. All operations must utilize a visual observer (VO). 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 functions prescribed in the operating documents.
8. The VO must not perform any other duties beyond assisting the PIC with seeing and avoiding other air traffic and other ground based obstacles/obstructions and is not permitted to operate the camera or other instruments.
9. The operating documents and this grant of exemption 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 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 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.

10. Prior to each flight the PIC must inspect the UAS to ensure it is in a condition for safe flight. 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. The Ground Control Station must be included in the preflight inspection. All maintenance and alterations must be properly documented in the aircraft records.
11. 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. The PIC who conducts the functional test flight must make an entry in the aircraft records.
12. The pre-flight inspection must account for all potential discrepancies, e.g. inoperable components, items, or equipment, not already covered in the relevant sections of the operating documents.
13. The operator must follow the UAS manufacturer's aircraft/component, maintenance, overhaul, replacement, inspection, and life limit requirements.
14. The operator must carry out its maintenance, inspections, and record keeping requirements, in accordance with the operating documents. Maintenance, inspection, alterations, and status of replacement/overhaul component parts must be noted in the aircraft records, including total time in service, description of work accomplished, and the signature of the authorized person returning the UAS to service.
15. Each UAS operated under this exemption must comply with all manufacturer Safety Bulletins.
16. The authorized person must make an entry in the aircraft record of the corrective action taken against discrepancies discovered between inspections.

17. The PIC must possess at least a private pilot certificate and at least a current third-class medical certificate. 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.
18. The operator may not permit any PIC to operate unless the PIC meets the operator's qualification criteria and 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 must be logged in a manner consistent with 14 CFR § 61.51(b). The VO is also required to complete the operator's training requirements. A record of training must be documented and made available upon request by the Administrator. Flights for the purposes of training the operator's PICs and VOs (training, proficiency, and experience-building), 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.
19. 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.
20. The UA may not operate within 5 nautical miles of an airport reference point as denoted on a current FAA-published aeronautical chart unless a letter of agreement with that airport's management is obtained, and the operation is conducted in accordance with a NOTAM as required by the operator's COA. The letter of agreement with the airport management must be made available to the Administrator upon request.
21. 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.
22. If the UA loses communications or loses its GPS signal, it must return to a pre-determined location within the planned operating area and land or be recovered in accordance with the operating documents.

23. The PIC must abort the flight in the event of unpredicted obstacles or emergencies in accordance with the operating documents.
24. The PIC is prohibited from beginning a flight unless (considering wind and forecast weather conditions) there is enough power to fly at normal cruising speed to the intended landing point and land the UA with 30% battery power remaining.
25. The operator must obtain an Air Traffic Organization (ATO) issued Certificate of Waiver or Authorization (COA) prior to conducting any operations under this grant of exemption. This COA will also require the operator to request a Notice to Airman (NOTAM) not more than 72 hours in advance, but not less than 48 hours prior to the operation. All operations shall be conducted in accordance with airspace requirements in the ATO issued COA including class of airspace, altitude level and potential transponder requirements.
26. 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.
27. Before conducting operations, the radio frequency spectrum used for operation and control of the UA must comply with the Federal Communications Commission (FCC) or other appropriate government oversight agency requirements.
28. The 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 UAS is operating. These documents must be made available to the Administrator or any law enforcement official upon request.
29. The UA must remain clear and yield the right of way to all manned aviation operations and activities at all times.
30. The UAS may not be operated by the PIC from any moving device or vehicle.
31. The UA may not be operated over congested or densely populated areas.
32. Flight operations must be conducted at least 500 feet from all nonparticipating persons (persons other than the PIC, VO, operator trainees or essential 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 and/or;
  - b. The aircraft is operated near vessels, vehicles or structures where the owner/controller of such vessels, vehicles or structures has granted permission 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, and;
  - c. Operations nearer to the PIC, VO, operator trainees or essential persons do not present an undue hazard to those persons per § 91.119(a).
33. All operations shall be conducted over private or controlled-access property with permission from the land owner/controller or authorized representative. Permission from land owner/controller or authorized representative will be obtained for each flight to be conducted.
34. 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.nts.gov](http://www.nts.gov).

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 January 31, 2017, unless sooner superseded or rescinded.

Issued in Washington, DC, on January 23, 2015.

/s/

John S. Duncan  
Director, Flight Standards Service